JANUARY 5, 1933. FIRST AERO WEEKLY IN THE WORLD REG. AT THE G.P.O. AS A NEWSPAPER

FLIGHT

JAN 16 1933

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The AIRCRAFT ENGINEER AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1254. (Vol. XXV. No. 1.) JANUARY 5, 1933 **Weekly, Price 6d. Post Free, 7½d. Abroad, 8d.**

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.
Telephone: (2 lines), Holborn 3211 and 1834.
Telegrams: Truditur, Westcent, London.

Subscription Rates, Post Free.

United Kingdom			United States			Other Countries		
	s.	d.					s.	d.
3 Months ...	8	3	3 Months ...	$2·20		3 Months ...	8	9
6 ,, ...	16	6	6 ,, ...	$4·40		6 ,, ...	17	6
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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1933.
Jan. 6. Bristol and Wessex Ae.C. Dance at Grand Spa Hotel.
Jan. 7. Reading Ae.C. Dance.
Jan. 9. British Empire League Reception for Mrs. J. A. Mollison.
Jan. 9. G.A.P.A.N. Monthly Discussion. Williamson Restaurant, Bow Lane.
Jan. 10. "Fuel Ignition in Compression Ignition Engines," Lecture by C. W. Lawson before R.Ae.S. Students' Section at 7, Albemarle St., W.1. Chairman, H. R. Ricardo.
Jan. 11. B.G.A. Ball in Honour of Mrs. Mollison at Portman Rooms.
Jan. 12. "Airship Development Abroad." Lecture by Sqdn.-Ldr. R. S. Booth before R.Ae.S.
Jan. 16. R.Ae.S. Informal Discussion at 18, John Street, Adelphi.
Jan. 26. "Human Limits in Flying," Lecture by Wing-Com. G. S. Marshall before R.Ae.S.
Jan. 26-28. Forest Gate Aviation Show.
Jan. 31. "Detonation." Lecture by F. R. B. King before R.Ae.S., Students' Section. Chairman, H. T. Tizard.
Feb. 1. Entries close for the Deutsche de la Meurthe Cup (Aero Club de France).
Feb. 2. "Operation of Aircraft Over Tropical Routes." Lecture by A. Piesman before R.Ae.S.
Feb. 3. Cinque Ports Flying Club Annual Dinner and Dance at. Rl. Pavilion Hotel, Folkestone.
Feb. 8. "Recent Operations in Kurdistan," Lecture by Group-Capt. A. G. R. Garrod before R.U.S.I.
Feb. 10. Viceroy's Challenge Trophy Race, Delhi.
Feb. 13. "A Review of Air Transport." Lecture by G. E. Woods Humphery before Inst. of Transport.

EDITORIAL COMMENT

PILOTS, as we remarked in our last issue, look ahead, and FLIGHT proposes in this issue to do likewise. First, we wish all our readers, all who fly, and above all the cause of flying itself, a very happy and fortunate year in 1933. That done, we must bethink ourselves what we mean by a fortunate year. What do we really want to see happen in the next twelve months? Air-minded folk are not children who hope for a Fairy Godmother to come and wave a wand and so order things that aircraft shall suddenly become the universal and only means of transport. We must be practical in our wishes. For instance, we do not want to see anybody attempt a regular air service across the Atlantic with a type of aircraft which does not give a reasonable assurance of safety, reliability and commercial profit. We do not want to see any air route attempted which does not fulfil this condition. The "flying fool," whenever he materialises as he (or she) does now and then, never finds a friend in FLIGHT.

Through the Windscreen

There are, however, a number of things which may reasonably be expected in the next twelve months, and which we should very much like to see accomplished facts before the time arrives for us to take once more the rear gunner's view and look back on the achievements of the year. We should very much like to see Great Britain capture the long-distance record, even if that record were made without completing a flight from Croydon to Capetown. Hitherto, to misquote the prophetess Deborah, the stars in their courses have fought against Great Britain. Perhaps the moon of February may be more kindly disposed.

Really no event in the coming year would give us more gratification than to see a really good showing made by the Boulton & Paul mailplane, which is now nearing completion. We do very much want to see the speed of aircraft harnessed and used methodically for the service of man. Record stunt flights by much-enduring pilots and much-enduring engines are all very well in their way. Everyone

admires the quality of endurance in a machine and in a human being, and as a branch of sport the flights are very admirable. Admirable, too, is the comparative speed with which Imperial Airways flies its passengers across the continents and seas; but what is high speed for passengers is all too slow for mails. We want to see organisation applied to speed, so that no mail pilot shall ever be flying when he is not fresh and fit, and no engine be running when only superb workmanship stands between it and a failure. Yet we want to see the mails flying on by night and day, with no pause except to refuel and change pilots, or, as will happen when the organisation is more fully developed, to change the mail bags with practised, disciplined hurry from one machine to another. Speed without effort or strain—that must be the ideal of the air-mail service. We do not want headlines, or thrills, or tense air dramas. We want the true romance of the accepted, ordinary, matter-of-fact, daily miracle. "Farewell Romance! and all unseen Romance brought up the 9.15."

Another thing which we very much want to see accomplished in 1933 is the extension of the air service from Karachi to Australia. This seems very likely to happen. When it has happened, we shall be able to look the whole world in the face and talk about the airways of the British Empire. Branch air lines will soon radiate out from the trunk lines, and indeed they have already begun to materialise. With Capetown and Canberra both within a few days of London we shall have no need to blush at mention of the New York-San Francisco air mail. Moreover, once the present eastern airway is extended from Karachi to Calcutta its value will be very much more than doubled.

On the African airway we hope to see the service much improved by the introduction of the "Atalanta" class of aeroplane, although it may not outclass the "Calcutta" boats in the matter of comfort for passengers. There must be a certain freedom from anxiety when flying in a boat along the line of a river and lakes. Four engines, however, are better than three, and the speed of the new monoplanes will be a great advantage.

We hope to see Private Flying speedily released from some of the ridiculous over-control with which it is at present afflicted, so that it may develop sanely and naturally.

Turning from civil to Service flying, the R.A.F. has two needs: a new night bomber and a new standard flying boat. We hope to see both these needs met in the next twelve months. Our night bomber squadrons are all equipped with types which were designed many years ago. We hope to see that altered in the course of the year.

In flying boats there is not just one need: there are several needs. One need is to continue the gradual increase of boats in size, power and performance. Another is to find one or more types of boat as standard equipment for R.A.F. squadrons. The new six-engined Short boat marks a notable advance in size and power; and we hope to see that boat make some convincing demonstration flight during the year. At present, however, we could hardly imagine the Air Ministry taking such a step as to equip a whole squadron with these very large boats. They may do so, of course, but for the moment the boat seems more suitable for experimental operation. We think rather that the time has come for replacement of the "Southampton," "Iris" III, and "Rangoon" types with something on the same lines but better. There is apparently room in the Service for at least two new types, one of which shall be fast, with limited endurance, for use in Home waters, and one which shall have very good endurance, for use overseas. We hope that the year will see both these wants met. When the "Southampton" was first produced it was justly said that it was so good that it was ahead of its time. It has had a long and very honourable life in the Service, but now a replacement type is fully due. It seems extraordinary that No. 205 (F.B.) Squadron at Singapore should still use the same type (and probably some of the same machines) on which it first flew out from Plymouth to Australia and back to Singapore five and a-half years ago. They are still good for a formation flight from Singapore to Darwin, as they proved last year, but it is none the less time that the squadron was re-equipped. The squadrons at Calshot, Mount Batten, and Pembroke Dock (three of which still have "Southamptons") need a faster type of boat; while the flying boat squadron at Malta has not yet got any boats at all, but uses Fairey III F floatplanes.

Just as 1932 was closing, it was announced that the Air Ministry had ordered a large autogiro which would carry five passengers. This, we hope, will be produced in the present year, and we hope that it will prove a great success. The limits of utility of the autogiro type have not yet been explored, and advances are welcome, not to say necessary. The above is not by any means an exhaustive list of what we should like to see brought about in 1933, but it expresses some of our chief hopes. We must now wait and see what the coming months will produce.

NEW YEAR HONOURS

AMONGST the names appearing in the list of New Year Honours published on January 1 are the following:—

KNIGHT

Ernest George Stenson Cooke, Esq., Secretary of the Automobile Association since 1905.

ORDER OF THE BATH

(Military Division.)

K.C.B.

Air Vice-Marshal Edgar Rainey Ludlow-Hewitt, C.B., C.M.G., D.S.O., M.C., R.A.F.

C.B.

Air Commodore Cuthbert Trelawder Maclean, D.S.O., M.C., R.A.F.

(Civil Division.)

C.B.

John Bradley Abraham, Esq., Assistant Secretary, Air Ministry.

ORDER OF THE BRITISH EMPIRE

(Civil Division.)

O.B.E.

Edward Llewellyn Pickles, Esq., M.B.E., Assistant Director of Contracts, Air Ministry.

M.B.E.

Arthur Clement Hamilton, Esq., Staff Officer, Air Ministry.

ROYAL AIR FORCE—AWARDS

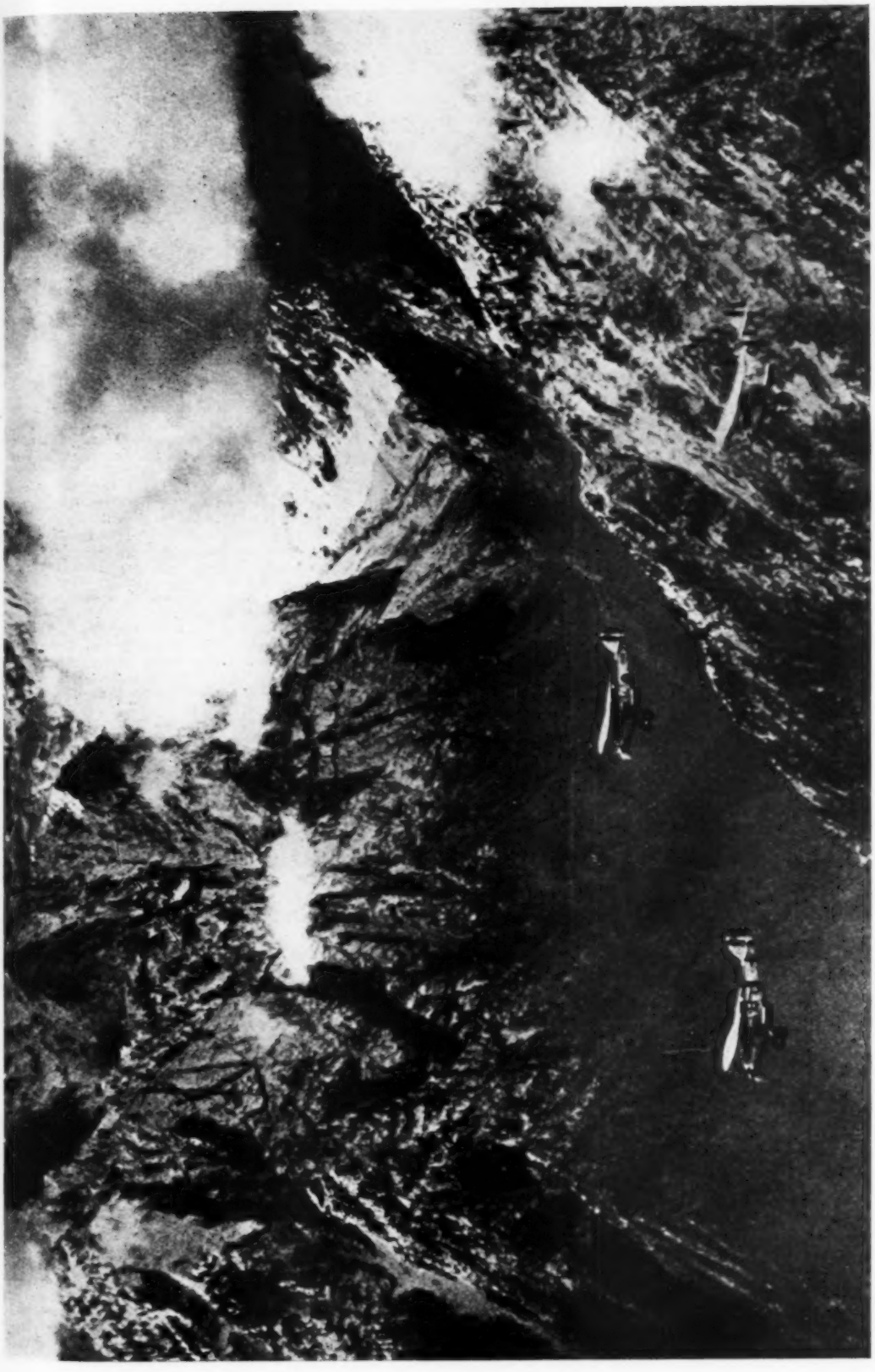
Air Force Cross.

Flt. Lt. Eric Delano Barnes.
Flt. Lt. Charles Howard Cahill.

Air Force Medal.

362571 Sgt. (Pilot) Ernest Charles Kidd.
505744 Sgt. (Pilot) James Hughes Jones.

[N.B.—Flt. Lt. Barnes is on the strength of No. 22 (Bomber) Sq. at Martlesham, and Flt. Lt. Cahill is on the staff of the Marine Aircraft Establishment, Felixstowe.]



OVER THE HIMALAYAS: A very fine flight was recently made by five "Harts" of No. 2 (Indian) Wing to Gilgit in the extreme N.W. of Kashmir, over Mount Rakapushi (25,550 ft.) and up the valley of the River Hanza. The flight also passed close to Mount Nanga Parbat (26,629 ft.) to the south of Gilgit. No. 2 (Indian) Wing is composed of Nos. 11 and 39 (Bomber) Squadrons. This flight was led by Flt. Lt. F. H. Isaac, D.F.C., of No. 39 (Bomber) Squadron. This photograph shows three of the "Harts" over a gorge at Rakhot. *(R.A.F. Photo: Crown Copyright Reserved)*

No. 19 (Fighter) Squadron

"Possunt Quia Possent"

By MAJOR F. A. de V. ROBERTSON, V.D.

DUXFORD is a very fine aerodrome on the flat plains of Cambridgeshire. Seen on a fine sunny day, those plains look cheerful enough, ideal flying country where one could put an aeroplane down almost anywhere. On a rainy winter's day they certainly suggest gloom. The city of Cambridge, beautiful to the eyes of all except the jaundiced Oxonian, is only a few miles away, but there does not seem to be anything else anywhere near at all. The visitor is inclined to think that life at Duxford must be dreary, but the officers of the R.A.F. station will not have it so. They stick up for their station. There are drawbacks, say the senior officers, in having a large town too near. It interferes with the community life of the station if officers and airmen are anxious to get into the town as often as possible. Its isolation makes Duxford an ideal station for sport. There is lots of shooting round about, and some hunting for those who like it. Boxing is a great ploy at Duxford, and officers and airmen alike concentrate on it. It is a grand sport, and keeps everyone very fit. This year Duxford station won the Lord Wakefield Boxing Trophy for the junior division of the R.A.F. The word "junior" means that large stations like Uxbridge are not allowed to compete. They are for the senior division. Squash rackets is also a popular game at Duxford.

At Duxford there are a Station Headquarters, a Meteorological Flight of two "Siskins" and an "Atlas"; the Station Flight, which caters for the needs of the Cambridge University Air Squadron, and No. 19 (Fighter) Squadron. It is with the last-named that this article is concerned. This squadron is one of the old war squadrons, and had a great reputation for fighting. At one time it was commanded by Maj. H. D. Harvey-Kelly, who had been the first pilot of the Royal Flying Corps to land his aeroplane in France. He commanded No. 19 Squadron in 1917 during the battles of Arras, and was killed while in command of the squadron. The machines which it was then flying were "Spads." The two Richthofen brothers were both engaged in the fight, but it was the German pilot Wolff who shot down Harvey-Kelly, mortally wounded, behind the German lines. On this occasion Harvey-Kelly had heard that the Red Baron had been seen over Douai, and he took up a patrol of three "Spads" of No. 19 Squadron to look for him. One of the three, Lt. Applin, who had had very little experience over the lines, was shot down in flames by Manfred von Richthofen himself; the second, Lt. Hamilton, had a gun jam, and tried to get away to the lines. Lothar von Richthofen and other German pilots got on his tail, shot his lower plane to pieces, and holed both his petrol tanks, so that he was obliged to land behind the German lines and was made prisoner of war. Maj. Harvey-Kelly was an officer who was universally admired and liked, and his loss was very severely felt. It is recorded in *The Red Knight of Germany* by Floyd Gibbons that the father of the Richthofens was visiting their aerodrome that morning, and as the two brothers landed after this fight, and got out of their "Albatros" machines, each in turn saluted his father and said "Good morning, father; I have just shot down an Englishman." However, the war record of No. 19 is dealt with below. Let us first consider its present doings.

FLIGHTS ECHELON ON THE LEFT: The "Bulldogs" of No. 19 F.S. are marked with a diced pattern of light blue and white. (FLIGHT *Photo.*)

No. 19 F.S. is equipped with the Bristol "Bulldog" with Bristol "Jupiter VII F." It may be described as a day-and-night fighter squadron, for the "Bulldog" is admirably suited for night fighting. One of the chief points about a machine for night use is its behaviour on landing, and the "Bulldog" has no tricks when near the ground, though perhaps it takes a rather long run after landing. A later model, it is understood, is fitted with wheel brakes, which should overcome this slight inconvenience. By night the fighter machines patrol singly, just as the night bombers attack singly, for collisions in the dark must not be risked. The night fighter may have to patrol for some time before it sees its enemy. Good endurance is therefore a desideratum in the night fighter, and the "Bulldog" has an endurance, for practical working purposes, of two and a-half hours. Of course, the speed at which petrol is consumed varies according to the amount of full throttle work which has to be done during a flight. If the machine were kept at cruising speed all the time, a "Bulldog" would probably be able to stay up for three hours. But cruising is not the business of fighters. If they are to achieve their

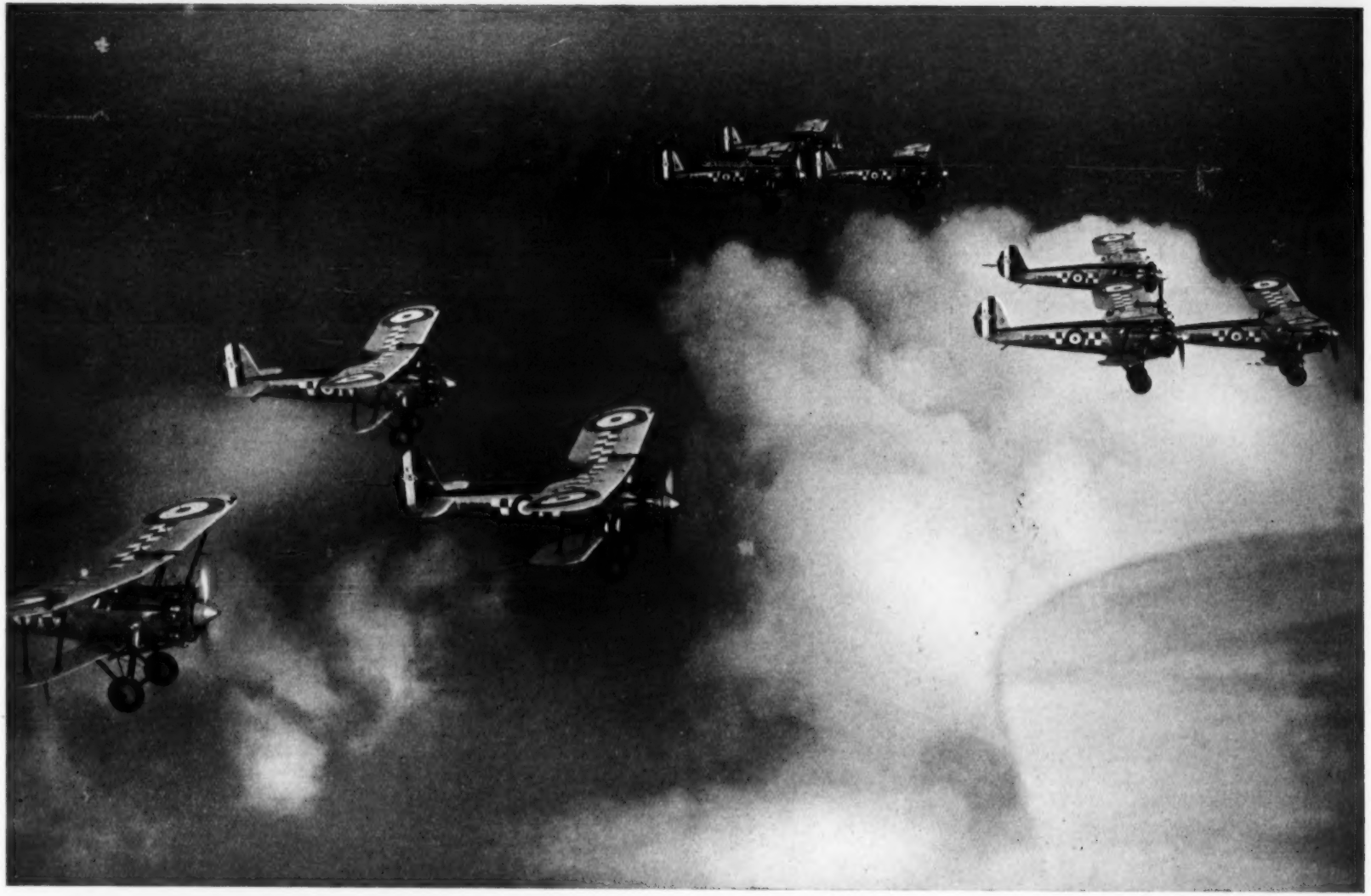
THE "BULLDOGS" SHOW THEIR TEETH: Another view of No. 19 F.S. in Flights Echelon on the left, stepped up. (FLIGHT *Photo.*)

object, they must intercept and attack, which certainly means opening the throttle; so two and a-half hours may be taken as the average endurance of the machine. A good endurance is also very desirable when a squadron of "Bulldogs" is sent up to try to catch day bombers returning to the coast from a raid. It is no use waiting until the raiders are overhead before sending up the fighters. They have to be in the air and at a great height in good time, waiting for a chance to intercept the bombers.

The "Bulldog" has also a very fine climb. For operational purposes by day it is not very helpful to count on the best that a single machine can manage. The only useful basis of reckoning is the climb of a squadron in formation. A squadron of "Bulldogs" can climb to 5,000 feet in 3½ minutes, to 10,000 in 7½, and to 15,000 in 12½ minutes. As for speed, the operational speed of the "Bulldog" with full service load is 145 m.p.h. at 5,000 feet, 136 at 10,000, and 120 at 15,000. It is at about 10,000 feet that the "Bulldog" begins to show its real quality. Its climb does not actually improve, as the above figures show, but it improves in comparison with most other machines. Above 10,000 the "Bulldog" would begin to outclimb some foreign machines which would have been leading the way below that height. In the same way it would increase its speed in proportion to other machines. At the same time, at that height the "Bulldog" becomes a nicer machine to fly, lighter on controls and so forth. The greater the height, the more does the "Bulldog" come into its own and show its superiority over any foreign fighter which it might conceivably have to tackle. Pilots who have flown in the war say that the "Bulldog" is most unmistakably a Bristol aeroplane, and in some way which they cannot quite define, but of which they are aware, it recalls some of the good points of the good old "Bristol Fighter," the most wonderful machine of its class which was produced during the war. In addition to its fine flying qualities, the squadron finds it a very good machine in the matter of maintenance, giving a minimum of trouble in that respect.

The training of a fighter squadron is divided into three periods. From October to February is the period of individual training, when the new pilots who come from Cranwell with permanent commissions and from the Flying Training Schools with Short Service commissions or as airmen pilots, are practised in all which concerns the "Bulldog" and the "Jupiter" until they are thoroughly expert in the flying of their machine. From February until some time in the spring is the period for flight training, in which each flight commander gets his flight to work and fly as a coherent whole. When that is over, next comes the squadron training, when the three flights have to work together and become a fully-trained operational unit of the Fighting Area. During the training period individual flights are sometimes sent off to another station to affiliate with another squadron. Last season one flight of No. 19 F.S. went to Thornaby to affiliate with No. 608 (North Riding) (Bomber) Squadron of the Auxiliary Air Force, and another flight went to Renfrew to affiliate with No. 602 (City of Glasgow) B.S. After the squadron training is over, the whole squadron goes on affiliation with another squadron, and No. 19 F.S. usually goes to Bircham Newton to affiliate with No. 35 (Bomber) Squadron. In May No. 19 F.S. went to Sutton Bridge to No. 3 Armament Training Camp for machine-gun firing and low bombing. The low bombing is done by judgment without bomb sights. In

A WAR-TIME GROUP: Officers of No. 19 Squadron, R.F.C., in November, 1917, at Bailleul. Left to right: Back row—Lt. H. V. Puckeridge, Capt. (now Wing Com.) J. Leacroft, M.C., Capt. (now Sqd. Ldr.) D. C. Bryson, M.C., D.F.C., Capt. (now Wing Com.) P. Huskinson, M.C. Front row—2nd Lt. (now Sqd. Ldr.) J. G. S. Candy, D.F.C., 2nd Lt. E. Olivier, 2nd Lt. R. Reid-Walker.



ON PATROL : No. 19 (Fighter) Squadron in Squadron Formation : The machines are Bristol " Bulldogs " with Bristol " Jupiter " VII.F supercharged engines. (FLIGHT *Photo.*)

machine-gun firing the present arrangement is that each individual pilot has to qualify as competent by firing at a ground target, and then proceeds to pass his tests by firing at a drogue target towed by a Fairey III F. Each pilot is given 200 rounds, and is allowed a quarter of an hour in which to get them off at the drogue, which resembles a wind sleeve in appearance. Three weeks are spent at Sutton Bridge, and they are considered a very important part of training. A pilot may be an excellent air fighter in the sense that he has great skill in manœuvring his machine and getting into position for shooting the enemy down, but if he is not a good enough marksman to finish off the business when he has got position, then all his skill in manœuvre will have been wasted.

Another feature of the training year is the A.D.G.B. Scheme. Every year each pilot has to pass in so many subjects set by the Command, Air Defence of Great Britain. Among these subjects are rigging, engines, armament, signals, air pilotage, operational duties, etc. Each unit has to find its own instructors to coach the pilots in these subjects, and Staff Officers from the Command come round to examine the pilots at each station in turn. This scheme keeps everybody up to date.

Usually at the end of the affiliation with another squadron come the grand operations known as Air Exercises, in which each squadron has to put into practice the results of its training season. Last season No. 19 F.S. was stationed at Northolt for the Exercises, and was employed on day work. These Exercises were not really tests of fighting abilities, but rather were intended to see how many interceptions of raids could be brought off. It was organisation rather than the brilliance of individual units which was tested.

During the period of squadron training the fighters are constantly busy practising forms of attack on either bombers or other fighter squadrons. Sometimes it is supposed that the enemy is flying just below a cloud bank, and the fighters cannot get above to dive on him. Sometimes it is supposed that he is just above the clouds, and then the climbing attack from below is made impossible. The squadrons have to practise methods of varying their attacks to meet all sorts of circumstances such as these. It may also be mentioned that the staff of the Fighting Area is always ready to receive and consider any ideas which occur to squadron leaders as to new forms of delivering attacks. There is nothing hide-bound about the Royal Air Force. It is always on the lookout for novelties which are good, and never rejects an idea which is new just because it is new. That, in part, accounts for the continuous progress which is always going on in the Royal Air Force.

THE PILOTS : A group of officers and airmen pilots of No. 19 F.S.
(FLIGHT *Photo.*)

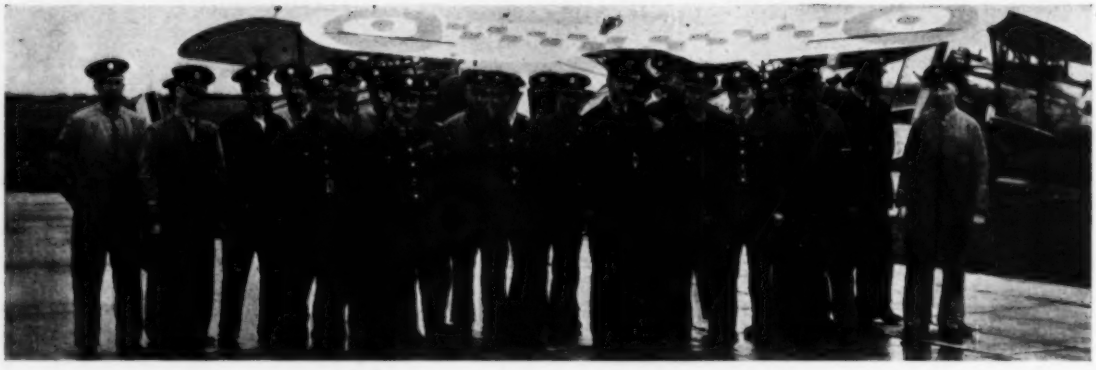
In the War

" Possunt Quia Possent " is the motto of No. 19 Squadron, which may be freely translated " They can because they think they can." The badge is a dolphin, which recalls the fact that in 1918 the squadron was flying Sopwith " Dolphins " in France. The squadron adds that the dolphin is an agile creature, quite appropriate as a badge for a fighter squadron. The Sopwith " Dolphin " was one of the first attempts to produce an altitude fighter, and it also embodied the features which nearly four years' experience of war had shown to be desirable in a fighter. It was distinguished in appearance by a pronounced back-stagger. Unfortunately, the French 200-h.p. Hispano was not equal in merit to the machine, and it caused a good deal of trouble to the " Dolphin " squadrons. When the Wolseley " Viper " was installed the result was very good.

Of course, No. 19 Squadron went through many changes before it arrived at the dignity of flying " Dolphins." It was formed at Castle Bromwich in September, 1915, as a

OFFICERS OF NO. 19 F.S. : Left to right : Back row—P/O. R. H. Hobbs, F/O's. G. N. Snarey, L. G. Belchem, E. E. Noddings, G. T. Jarman, J. A. S. Brown, E. Foster, T. H. Burleigh, P/O. D. Scorgie. Front row—F/O. B. N. Matson, Flt. Lts. H. W. Pearson-Rogers, J. S. L. Adams, Sqd. Ldr. A. C. Sanderson, D.F.C., Flt. Lt. E. C. de V. Lart, F/O's. W. M. L. MacDonald, and A. W. Vincent. Note : F/O's. Noddings and Snarey form the Met. Flight.

ON PATROL : No. 19 (Fighter) Squadron in Squadron Formation : The machines are Bristol " Bulldogs " with Bristol " Jupiter " VII.F supercharged engines. (FLIGHT *Photo.*)



THE AIRMEN : A group of N.C.O's. and aircraftmen of No. 19 F.S. at Duxford. (FLIGHT *Photo.*)

training squadron, using various types. In December, 1915, it received all B.E.2.C's and gave training in night flying. Among its pupils was Leefe Robinson, V.C., the first R.F.C. man to shoot down a Zeppelin. Then the squadron mobilised with the R.E.7 and moved to Netheravon and then to Filton ; but before going overseas it was re-equipped with the B.E.12 with 140 R.A.F. engine. Finally, on August 1, 1916, Maj. R. M. Rodwell, the C.O., led it overseas to Fienvillers Aerodrome, where it joined the 9th Wing.

A period was spent in getting used to the B.E.12, which was a single-seater tractor with a novel type of interrupter gear. In appearance it looked very much like the B.E.2.C, and apparently the Germans at first mistook it for that type, and were surprised at the speed shown by the B.E.12. It was classed as a fighter, but it was never equal to the best of the enemy fighters, and by the middle of September, 1916, the two squadrons which were flying this type (Nos. 19 and 21) were no longer used for fighting work. Gen. Trenchard had never liked the type, and he asked for it to be replaced. In the meantime he used the two squadrons for night work, defensive patrols and bombing under escort. This was a very drastic action, for the battles of the Somme were still raging, and No. 19 and two other squadrons had been specially brought out from home to strengthen the fighting power of the R.F.C. during the Somme offensive. It is well known that during most of that offensive the British obtained something very like complete mastery of the air, until Oswald Boelcke reorganised the German fighters. Boelcke was killed through a collision in a fight on October 28, while No. 19 Squadron was re-equipping with the " Spad S.VIII " with 150-h.p. Hispano engine.

At the beginning of February, 1917, Maj. H. D. Harvey-Kelly took over the command of the squadron, which went to St. Omer for a special course in flying the new machines, and to Camiers for a course of air gunnery. The " Spad " had proved a very fine fighter in the French service, and it also did our men very well. Early in April the squadron moved to Vert Galand in preparation for the Arras offensive. By this time Baron Manfred von Richthofen, the successor of Boelcke, had infused the German fighters with a most aggressive spirit, and his grouping of the fighters into what we called a " circus," corresponding very much to a fighter wing, had been most successful. The casualties among British observation and photographic machines rose to most grievous heights, and our fighters, too, were often outmatched by the " Albatros." But our men never lost their offensive spirit —Richthofen used to say that it was the British spirit which made his bag so large—and it was in that spirit that the C.O. himself took up a patrol of three " Spads," one with a very raw pilot, to look for Richthofen on April 29, and so lost his life after commanding the squadron for only 27 days. Next day Maj. W. G. S. Sanday, D.S.O., M.C., took over the command.

By the middle of May the Arras offensive was over, and the 9th Wing moved up to take part in the next offensive against the Messines position. No. 19 Squadron went to Liettres. In August it moved again to Poperinghe, and took part in constant fighting and " ground straafing." It was during this work that Lt. Pentland had an unusual adventure. He was working with an infantry attack, scattering German infantry with his gun, and he had also blown up an ammunition dump with a bomb. He had several fights, and finally he dived into the British barrage. A shell, presumably one of ours, went right through his fuselage and cut most of the controls. He just managed to get down behind the British lines, and is not recorded to have been any the worse for his adventure.

On Christmas Day, 1917, the squadron moved to St. Marie Cappel, and four days later six of the " Spads " had a great fight for some 20 min. with 14 " Albatros " machines near Houthulst Forest, in which one German was sent down in flames and six others went down out of control. No " Spads " were lost.

In January, 1918, the squadron re-equipped with " Dolphins," and spent some time practising with the new machine. In February the squadron returned to Bailleul, and on March 8 the first German victim fell to a " Dolphin." It was shot down by Capt. O. C. Bryson. This officer is still in the service. He is a squadron leader in charge of engines at the Central Flying School, and holds the Military Cross, the Distinguished Flying Cross and the Albert Medal. He is one of the group of officers taken in 1917 which appears on page 5. On March 19 Maj. E. R. Pretymen took over command. He is now a wing commander, holds the Air Force Cross, and is in command of the station at Hal Far in Malta. Then the German offensive commenced, and the squadron had to make a number of moves. It continued to fight hard, and on October 30, while nine " Dolphins " were escorting some D.H.9.A's of No. 98 Squadron, they were attacked by some 30 enemy fighters. Five " Dolphins " went down, but three of the pilots were uninjured, and four of the bombers were lost. Against that, five of the enemy were shot down and crashed, four more went down in flames and two more out of control.

The squadron was at Abscon, a captured German aerodrome, when the Armistice was signed, and it remained there until February, 1919. It then returned to England and was disbanded at Ternhill. In April, 1923, it reformed at Duxford and took its place as a fighter squadron in the scheme of air defence of Great Britain.

Royal Air Force Squadrons

Other descriptive articles concerning the work of various R.A.F. Squadrons, etc., have been published in FLIGHT as follow:—

H.M. Aircraft Carrier *Glorious*. May 16, 1930.
No. 4 (Army Co-operation), South Farnborough ; No. 17 (Fighter), Upavon ; and No. 33 (Bomber), Eastchurch. June 27, 1930.
No. 601 (County of London) (B.) Sq., A.A.F. (at Lympne). August 15, 1930.
No. 43 (Fighter) Sq. (Tangmere). September 19, 1930.
No. 2 (Army Co-operation) Sq. (Manston). December 19, 1930.
No. 101 (Bomber) Sq. (Andover). April 24, 1931.
Nos. 204 and 209 (Flying-Boat) Sq. (Mount Batten). June 12, 1931.
" 1890–1912–1931." (An Outline of the Growth of the R.A.F.) June 26, 1931.
Cambridge University Air Sq. (at Old Sarum). July 10, 1931.
Central Flying School (Wittering). July 17, 1931.
Oxford University Air Sq. (at Eastchurch). August 7, 1931.
No. 600(City of London)(Bomber) Sq.,A.A.F. (at Tangmere). August 21, 1931.
No. 605 (County of Warwick) (Bomber) Sq. (Cas. Bromwich). April 1, 1932.
No. 40 (Bomber) Sq. (Upper Heyford). May 13, 1932.
Nos. 7 and 58 (Bomber) Sq. (Worthy Down). June 10, 1932.
A visit to H.M.S. *Exeter* of 2nd Cruiser Squadron, Home Fleet. June 17, 1932.
Oxford University Air Sq. (Eastchurch). July 22, 1932.
Cambridge University Air Sq. (Netheravon). August 5, 1932.
No. 1 Air Defence Group (A.A.F. and Cadre Sqs.). August 12, 1932.
No. 100 (Bomber) Sq. (Donibristle). August 19, 1932.
Scotland's Auxiliaries : No. 602 (City of Glasgow) (Bomber) Sq. and No. 603 (City of Edinburgh) (Bomber) Sq. September 16, 1932.
London's Auxiliaries ; Nos. 600, 601, and 604 B. Sq. October 20, 1932.
No. 25 (Fighter) Sq. (Hawkinge). December 8, 1932.

From the Clubs

AN ENJOYABLE AFTERNOON AT HANWORTH

Another Outing for the Lowe-Wylde "Babies"

"WAL, I like flyin' well enough," he said, "but the' ain't sich a thunderin' sight o' fun in't when ye come to light."

But had Trowbridge witnessed Mr. Lowe-Wylde's "Baby" planes gambolling through the air like young lambs rejoicing in newly grown wings, the above lines might never have been written, for of those who visited the London Air Park at Hanworth on Tuesday, December 27, few could have returned home complaining they had not enjoyed themselves. Of excitement there may have been but little, for in these modern days it takes a speed of 400 m.p.h., backed up by a sensational press, to rouse in our senses a real thrill.

MR. ANDREWS POSES: The Eldest "Baby" flies past in fine style during one of the heats. (FLIGHT *Photo.*)

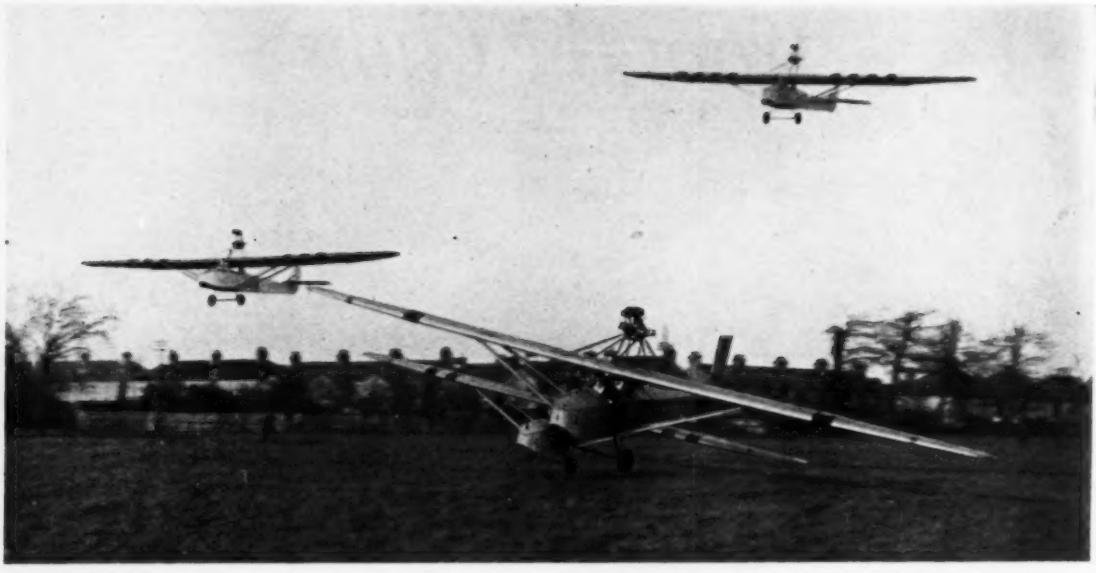
Four of Mr. Lowe-Wylde's light aircraft took part in races round pylons made of rubber and painted with light and dark stripes, a balloon attached to each, which proved quite adequate turning points. Flt. Lt. Stainforth had an interesting duel with Mr. Kaye Don, who incidentally has only just returned to flying. The latter won, causing no little surprise, but we hope no loss of anything financial. Mr. Kaye Don, after the manner of motor-boat pilots, rushed up to the pylons, rammed his stick hard over, and skidded round into the straight again. Flt. Lt. Stainforth, however, with the race for the Schneider Trophy evidently still in his memory, turned wide and gained height, hoping to pick up again on the ensuing dive. Later Mr. Kaye Don was beaten by Mr. C. W. A. Scott, whose method of cornering was more effective than attractive.

Other pilots who raced during the afternoon were Mr. Lowe-Wylde himself, Mr. C. J. Longmore, Flt. Lt. H. H. Leech (who forced-landed through lack of petrol, thereby demonstrating the ease and safety with which these machines can be landed at a moment's notice from but a few feet up), Flt. Lt. E. D. Ayre, Mr. W. A. Andrews, Mrs. Victor Bruce and Wing. Com. H. M. Probyn. The two latter were disqualified for hitting the balloons attached to the pylons. Between races, exhibitions of crazy flying were given, and to conclude the programme, as far as flying was concerned, there were two races between horse and aircraft. The horse's name was not "Pegasus," but "Ebor," and though he had no wings he had a stout heart. Ably piloted by Col. the Master of Sempill, with a start of half a lap, he won by a small margin, due no doubt to the machine carrying more weight in the shape of Mr. Scott. (Capt. Dancy did not, as was alleged, handicap "Ebor" on form.)

In another race of the same nature the aircraft, this time with Flt. Lt. Stainforth "up," beat "Ebor," again piloted by the Master of Sempill, by a short head. "Ebor," incidentally, has a tendency to swing to the left, having lost one eye in a recent unemployment disturbance, neither the unemployment nor the disturbance being "Ebor's"; but he was entirely undisturbed by the roar of an engine coming up from behind. After all, what is there to worry about in a rear attack from a Douglas engine after you have seen gallant service as a police horse in Hyde Park, and had fireworks exploded beneath you?

MR. AYRE IN HIS ELEMENT (but only just). No. 3 "Baby" approaching the inflated rubber pylon (FLIGHT *Photo.*)

Whether air racing round pylons will again become a popular sport, as it was at Hendon in the old days, remains to be seen, but if it does, the best track would surely be one in the shape of a figure of eight, whereby each of two racing machines would have two turns on the inside of the track and two on the outside. This would eliminate any need for handicapping. Mr. Lowe-Wylde, assisted by other pilots, has once again demonstrated the manœuvrability of his "Baby" machines, and proved



HULLO TWINS! (Twice): The whole family in formation (a trifle unorthodox). Reminiscent of Kensington Gardens on a fine morning.

them to be a welcome creation in that they both amuse and interest.

In FLIGHT of December 1 it was suggested that these 6-14 h.p. machines could be used for instructional purposes, and on Tuesday a service pilot, who has spent many hours instructing, expressed his opinion that much time and expenditure of material could be saved by making service pilots undergo a preliminary few hours' instruction on such dual machines as these.

In conclusion, the use of the word "ultra" is to be deprecated in connection with light aircraft. Why use a Latin word when there is the whole of the English language at our command? Surely, to utilise a word from an ancient and dead language to describe a very modern creation is the height of incongruity. Also, the word "ultra" means "beyond," "over," "farther off," or "extreme," none of which describe Mr. Lowe-Wylde's light aircraft. Even to describe them as extreme light aircraft is hardly correct if the meaning of the word extreme is carefully noted.

On Wednesday, December 28, Mr. Lowe-Wylde did a height test on one of his machines. An official barograph was carried which recorded the rate of climb as a perfectly steady 120 ft. per min. up to 4,300 ft. Unfortunately, the supply of petrol then ran out, after 37 min. flying. It is worth noting that the engine being fitted with the usual motor-cycle type carburetter, could, had it been necessary, have been adjusted as regards mixture to suit the altitude, but this was found unnecessary, and there was no falling-off in power at all. The ceiling would therefore appear to be much higher than that attained. Considering the fact that the machine was carrying a load of 45 lb. per h.p., this performance is quite remarkable and exceeds expectations. It is to be hoped that the Air Ministry will waste no time in arriving at a decision in regard to the recognition of these machines, thereby allowing the designer to carry on development unhandicapped.

ASSOCIATED LIGHT AEROPLANE CLUBS

A meeting of the General Council was held at the Royal Aero Club on December 14, 1932. Clubs were represented as follows:—Bristol and Wessex Aeroplane Club, Capt. L. P. Winters and A. H. Downes-Shaw; Hampshire Aeroplane Club, W. L. Gordon; Herts and Essex Aeroplane Club, F. E. Darlow; Lancashire Aero Club, I. C. Sellars; Leicestershire Aero Club, R. H. S. Brown; Liverpool and District Aero Club, D. Warner Bond and A. M. D. Grenfell; London Aeroplane Club, Maj. K. M. Beaumont, D.S.O., and Maj. H. A. Petre, D.S.O., M.C.; Midland Aero Club, Maj. G. Dennison; Newcastle-on-Tyne Aero Club, B. M. Dodds; Norfolk and Norwich Aero Club, C. Gowing; Scarborough Aero Club, W. R. Baynes; Royal Aero Club, Col. M. O'Gorman, C.B., and Maj. A. Goodfellow. In attendance, H. E. Perrin, Secretary to the General Council. Maj. K. M. Beaumont was voted to the chair.

Private Pilot's Licence

The General Council considered a communication from the Air Council on the question of the adequacy of the present tests and requirements demanded for a Private Pilot's Licence. After a full discussion, the General Council arrived at the conclusion that no alterations were necessary at present. The representatives of the Bristol and Wessex Aeroplane Club undertook to put forward a scheme for uniformity of regulations to cover passenger carrying for the consideration of the General Council at its next meeting.

FATHER GIVES THE "BABY" ITS BOTTLE: Mr. Lowe-Wylde, the Douglas engine, and the petrol "bottle." (FLIGHT *Photo.*)

Civil Aviation Meetings and Royal Air Force Support

The General Council considered the question of Royal Air Force support at civil aviation meetings in 1933. The Air Council had intimated through the Royal Aero Club that they were prepared to consider giving Royal Air Force support at four civil aviation meetings during 1933, including one on a generous scale if held on Saturday, July 1. It was decided to defer the matter until the Clubs had had a further opportunity of considering their programmes for 1933.

LONDON AEROPLANE CLUB

The London Aeroplane Club was closed for the week over Christmas and several of the members departed to the London Gliding Club's camp at Dunstable, where they received primary instruction on the Dagling, but, owing to the inclemency of the weather, they were unable to "go over the top."

On December 31 a successful New Year dance was held, and Wolf Hirth, the world famous soaring pilot, gave an extremely interesting cinema show which included a film of his historic flight over Brooklyn.

NATIONAL FLYING SERVICES (HANWORTH)

A considerable amount of cross-country flying has taken place during the past week; Mr. T. Shahi flew to Old Sarum and back, Mr. G. Farquharson carried out his "B" licence night-flying test from Croydon to Lympne, and Miss Honor Kendall and Mr. D. Llewellyn also made cross-country flights. Mr. G. Cannon has received local night-flying dual, Mrs. Battye has received dual, Mr. K. Lotwalla has done figures of eight tests for "B" licence, Mrs. Victor Bruce went off solo after a brief refresher of dual, and Cadet Soman, of the Royal Indian Marines, has commenced flying instruction. The Christmas festivities went off merrily; many members brought parties and the Christmas spirit prevailed from the two beautifully decorated trees at the base of the clubhouse steps to the old-fashioned fare provided within. Miss June Forbes-Sempill (aged 9) is now receiving dual instruction.

MAIDSTONE AERO CLUB

The Club has arranged a series of dances for the coming year, every Saturday and Sunday from 6.30 p.m., with orchestra, and for these there will be a charge of 2s. 6d. for members' guests or non-members, one each quarter and one at the end of the year. The Landing Competition for the annual trophy will be held as usual, also the monthly Spoon Competitions. Frequent displays, aerial pageants and gymkhanas will also be staged throughout the summer months. During the early part of the year the Club will be officially opened and probably a Kent Air Pageant will be arranged. The entrance fee after January 1 will be one guinea, the annual subscription of three guineas remaining the same; this entitles members to attend all functions accompanied by two lady guests, which the Club maintains is equivalent to reducing the annual subscription to one guinea (that makes the value of one lady, one guinea—Shame!).

The New Year's Eve dance was a great success and very well attended, a large gathering saw the New Year in and wished the Club prosperity for 1933. The monthly "At Home" on Sunday, January 8, will be in the nature of a visitors' "At Home," and all those interested in the Club or in aviation are especially invited. Already considerable promise is shown for the New Year, the navigation classes are being well supported, and many members are about to do their first solo. Arrangements are being made for a "Bluebird Gipsy I" to be available for members from January 1.

MESSENGERS' CLUB

The Messengers' Flying Club has now been going for just over a year and has justified its existence; 104 messengers of the company have had flights, though the strength of the Club, for financial reasons, is limited to 40, divided into three groups, one group visiting an aerodrome every Sunday and receiving flights. The Club possesses three licensed pilots, one of whom is seconded to the Autogiro to obtain a "B" licence and a ground engineer's licence, while many other messengers have been placed with aircraft firms on the expiration of their service with the company. Many well-known pilots have consented to give lectures, including Wing Com. Orlebar, Flt. Lt. Stainforth, Messrs. Malcolm Campbell, Brie, W. O. Manning, H. Fielden, Max Findlay, O. Cathcart Jones, Gordon England, Col. the Master of Sempill and Mrs. Victor Bruce. Messengers are available for duty at flying meetings, and if applications are sent to G. Dorman, Mackay House, Wormwood Street, London, E.C.2, they will be promptly dealt with.

YORKSHIRE AEROPLANE CLUB (N.F.S.)

Gales and fog have prevented much flying being done during the past week. The new Leeds University Flying Club is now affiliated to the Yorkshire Club and the first members are taking instruction.

BAGSHOT AND DISTRICT MODEL AERO CLUB

Flying has taken place every Sunday since the Club was formed, and the Club will be only too pleased to meet any interested people on the flying ground at The Queen Victoria Memorial, Chobham Common. The competition arranged for December 11 had to be postponed owing to the prevailing high winds. The Club applied for affiliation to the S.M.A.E. for the coming year and has duly been elected. New members continue to come forward, the total now being 18. Next indoor meeting January 12 at 8 p.m. in the clubroom at The King's Arms Hotel, Bagshot. Hon. Secretary: F. P. Eads, "Brookleigh," High Street, Bagshot.

CAWNPORE FLYING CLUB DISPLAY

An interesting programme was provided by the Cawnpore Centre of the Delhi and United Provinces Flying Club at the annual meeting recently in the presence of Sir Malcolm Hailey, the Provincial Governor, who flew from Lucknow in an aeroplane piloted by Capt. Riley. A demonstration of the handiness of light aeroplanes and of formation flying was given by seven aeroplanes, three from Karachi piloted by Maj. Jones and Messrs. Gallimore and Langford, two from Delhi piloted by Capt. Riley and Barbir Singh, and two aeroplanes from Bombay whose pilots were Lt. Commanders Buckley-Beard, and Guzdar, of the Royal Navy. This was followed by an activity ride of the Royal Artillery and the officers of the 77th Battery, R.A., followed by an exhibition flight by Capt. Riley, consisting of loops, half rolls, complete rolls, spinning, nose diving, etc., finishing with a display of crazy flying.

Next was the Battle of Bloncsoleigh, the inhabitants of which are known as Bloneses, a turbulent and terrible tribe which are neither able to write nor speak, only having three words in their language—Yo, Ya, and Yum, meaning nothing. The Bloneses see an aeroplane overhead. Believing that the occupants of it have more miserable faces than theirs, they shoot down the aeroplane and capture its crew. Retribution quickly follows; other aeroplanes, hearing the noise of the heavy landing of their captured colleagues, proceed to their rescue. The Bloneses, being unable to sound the sibilants, cannot sue for surrender, and are soon demolished; the captured crew is happily rescued and the stronghold of the enemy is blown up.

At the conclusion of the programme quite a number of Indian ladies went up for joyrides.

BENGAL FLYING CLUB

November last was a busy month in spite of many wet week ends, and many joyriders have visited the Club for a first flight. Among many visitors were Mr. Loew, Vice-President of the Metro-Goldwyn Mayer Corporation, who arrived on November 4 from Hanoi in his Lockheed "Orion" piloted by Capt. Dixon; this machine, with its retractable undercarriage, was an object of great interest, and many visitors came to view it; it departed next day for Bombay, where it arrived non-stop after 7 hr. flying, thereby demonstrating the advantage of air travel, for the Imperial Mail train takes about 40 hr. to travel the same journey (as was reported in FLIGHT of November 24, this machine crashed at Victoria on November 18, Capt. Dixon being killed and Mr. Loew injured). Mr. Hibert, who is flying round the world, arrived from Allahabad in a Candian-built "Gipsy Moth," and departed on November 17 for Akyab; Mrs. Montague, who has been on a flight from England to China and return, landed on November 16, and had her engine overhauled by Indian Air Survey & Transport, Ltd. The K.L.M. keep up to schedule; five machines passed through going out to Batavia and five on the return journey; they rarely have less than three passengers on their machines. The French Air Orient have also five machines passing through each way during the month. Messrs. E. Arndt, J. N. Barua and

The London Gliding Club commenced their ten days' camp on Boxing Day, on the Dunstable Downs, near Luton, Bedford. Enthusiasts received a great disappointment for the first day's gliding owing to the thick fog.

S. C. Ghose went solo during November, while Messrs. H. H. Reynolds, K. K. Ganguly, K. N. Choudhury and A. D. Mookerjea passed "A" licence tests. The total membership is 323, the flying members numbering 126 ; the flying times for November have been: dual, 33 hr. 55 min. ; solo, 93 hr. 10 min., which, with only three machines available, is very creditable.

Notes on the Bengal Flying Club, Ltd., November, 1932

November has been a busy month in the Bengal Flying Club, although quite a lot of wet weather was experienced at week-ends. The new soloists have been very keen, and many joy-riders have visited the club and have taken their first flights.

First Solos during November: 1. Mr. E. Arndt, 12.11.32 ; 2. Mr. J. N. Barua, 18.11.32 ; 3. Mr. S. C. Ghose, 19.11.32.

The undermentioned passed their "A" licence tests: Mr. H. H. Reynolds, 29.11.32; Mr. K. K. Ganguly, 30.11.32; Mr. K. N. Choudhury, 30.11.32; Mr. A. D. Mookerjea, 30.11.32.

Flying Time	Dual. h.	m.	Solo. h.	m.
"Ab initio" pupils under instruction	29	55	29	05
Licensed or qualified pilots	4	00	50	30
Joy-riding	—		8	05
Tests	—		5	00
Other Flying	—		0	30
	33	55	93	10

Number of Aircraft in Club Use

1. D.H. 60M. "Moth," V.T.-A.C.N.; 2. D.H. 60M. "Moth," V.T.-A.C.E.; 3. D.H. 60G. "Moth," V.T.-A.A.D.

Total Membership—323. Number of Flying Members: European, 79 Indian, 47

Private aeroplanes from America, Canada and England have visited Dum Dum and refuelled on their various flights.

Mr. Loew, Vice-President of the Metro-Goldwyn Mayer Corporation, arrived on November 4 from Hanoi in his Lockheed Orion NC12229 Pratt & Whitney "Wasp" engine), piloted by Capt. Dixon. This machine with its retractable undercarriage was the object of great interest to club members, and many visitors came from Calcutta to view it. It departed the following day for Bombay, where it arrived non-stop after seven hours' flying. This shows the advantage of air travel when one considers that the Imperial mail train takes about 40 hours to make the same journey.

A formation of club machines flew over the Cenotaph on November 11 and paid homage to the fallen along with other service units.

Mr. Hibert, who is making a round the world flight, arrived from Allahabad on his Canadian built "Gipsy Moth" CF-ADC, and departed again on November 17 for Akyab.

Mrs. Montague, who has been on a flight from England to China and return, landed on November 16 and had her engine top-overhauled by Indian Air Survey & Transport, Ltd.

The K.L.M. still keep up to schedule. Five machines passed through Dum Dum going out to Batavia and five on the return journey to Holland.

The K.L.M. rarely have less than three passengers on their machines now, which shows that air travel towards the East is becoming popular with business men. The French Air Orient had five machines passing through each way during the month. They are also carrying passengers between various points on the route from France to China.

GLIDING ENTERPRISE—

No club has made better progress than the London Gliding Club. They have built up a most attractive site at Totternhoe, near Dunstable; where the visitor will find a cluster of buildings on an open space at the foot of the Downs. Right from the beginning those responsible for the welfare of the Club insisted that it must be run and built upon a sound financial basis. This entailed very considerable expenditure of personal effort on the part of the members, but that effort was always willingly given, with the result that, when buildings were required—whether a club-house or hangars—members turned out and spent their week-ends putting them up.

Their enterprise is shown by the camp they arranged for Christmas, for, about a week after Boxing Day quite a large number of members and visitors have been gathered together to listen to words of wisdom from Herr Wolf Hirth, who, with his companion Herr Heinz Wallischeck, flew over in a "Klemm" ("Hirth" engine) last Wednesday, December 28.

Owing to the wind blowing most unpropitiously from the south, it was impossible, up to Saturday at any rate, for Herr Hirth to demonstrate the finer points of soaring flight to the members ; he was thus forced to fall back upon lectures and short demonstrations carried out by towing the Club "Professor" up to an altitude of about 1,200 ft. with his "Klemm." When we watched him start from a large field north-west of Dunstable, on Saturday, Herr Wallischeck flew the "Professor," and managed to prolong his flight for nearly 5 min. before landing. He was, of course, unable to obtain the help of any up-currents whatsoever over a flat field such as that, and the demonstration served only to show how to fly a sailplane in a manner which would lose height at the slowest rate.

Herr Hirth is an admitted expert both in cloud and thermal soaring, and his talks on both subjects were particularly interesting. He explained during one of his talks the technique of using the rising warm air, which is evident in front of a thunderstorm due to the progress of a "cold-front," for obtaining and retaining altitude and for travelling great distances across country. On such flights he has, for example, flown steadily at heights of over 9,000 ft. and encountered up-currents of more than 25 ft./sec.!

With regard to thermal currents, he explained how these were in evidence over almost all types of country, and how an unstable condition of the atmosphere was the best for their generation, while an inversion invariably denoted the complete lack of thermal currents.

He has a fund of anecdotes to retail to his fortunate listeners, but not one of them caps the tale of a lady of 80 who, after being taken for a flight in a two-seater sailplane by a member of the London Gliding Club, said: "Thank you so much ; now I know what Elijah felt like when he ascended to Heaven in a chariot of fire!!"

TWO NEW JAPANESE MILITARY TYPES

A LIGHT RECONNAISSANCE MONOPLANE : The Mitsubishi " 92 " is fitted with 420-h.p. Mitsubishi " Jaguar " engine.

FROM a reader of FLIGHT in Tokyo we have received the two photographs of the latest types of aircraft to be adopted by the Royal Japanese Army Air Force. One is a Kawasaki K.D.5 single-seater biplane with Kawasaki B.M.W. 600-h.p. engine. The other type is a Mitsubishi product, type 92 monoplane, and is a light reconnaissance machine powered with Mitsubishi air-cooled engine of 420 h.p.

The Kawasaki K.D.5 single-seater fighter is known in the Army Air Force as the type " 92." The significance of the number is that the machine was adopted as standard equipment 2,592nd year after the accession of the Emperor Jimmu (1932 of the Christian era). This Japanese single-seater fighter is reported to be capable of attaining a speed of 205 m.p.h. at sea level. The ordinary loaded weight of the machine is 3,110 lb., at which weight a height of 16,400 ft. is reached in 5 min. 40 sec. The maximum permissible gross weight is 3,585 lb., and at this weight the altitude of 16,400 ft. is reached in 6 min. 50 sec. These climb figures were achieved by the Kawasaki test pilot Tanaka. Details concerning the structural features are not available.

The Mitsubishi " 92 " monoplane, although designed primarily as a light reconnaissance machine, can also be used as a two-seater fighter and as a light day bomber. The specification to which the machine was built calls for a maximum speed of at least 155 m.p.h. at the gross weight of 3,960 lb. The machine is reported to be very manœuvrable and to be capable of spinning, looping, rolling, etc. The fuselage structure, it is interesting to note, makes use of round tubes flattened at the strut joints as in certain British machines.

A JAPANESE SINGLE-SEATER FIGHTER : The Kawasaki K.D.5 has a Kawasaki B.M.W. engine of 600 h.p.

A SOUTH AFRICAN JUMP

W. KERR, a South African ground engineer living in Durban, broke the South African parachute jump record easily on November 19 in Durban with a leap of 17,300 ft. It is believed locally that this is also a record for the British Empire.

Mr. Kerr, who was trained at Roberts Heights, Pretoria, by the South African Air Force, is the only civilian in the country with an "X" licence. His jump was made without the assistance of oxygen, and he relied on a single Irvin parachute. The object of his effort was to demonstrate to the South African public the safety of parachuting, and also to give a fillip to a jumping school which is to be established at the Durban aerodrome shortly, owing to the many requests made by members of the public to be allowed to indulge in the thrills of the "sport." Mr. Kerr's greatest jump before his record was only 2,000 ft.

It was his intention to attack the world's record established by Frau Lola Schröter, who leapt out at an altitude of over 4½ miles at Kiel in September. The "Puss Moth" in which he ascended, however, was carrying too great a load of petrol, and could not make so high a ceiling. The jump was made several miles from Durban, the "Puss Moth" taking one hour and 20 min. to reach its limit. It was piloted by Lt. W. Bellin, of Union Airways. Mr. Kerr took 20 min. to reach the earth and drifted ten miles during his descent. He was very ill between 17,000 ft. and 8,000 ft., and complained of the cold. He passed through several layers of clouds, and eventually landed in a wattle plantation. The jump was watched by a large crowd which congregated near the Valley of a Thousand Hills.

It was generally held in South Africa that even had Lt. Com. Glen Kidston, R.N., carried a parachute, he would have found it impossible to get out of a closed machine of the "Puss Moth" type, but this theory was definitely disproved by Kerr, who claims that he left the machine within five seconds, although he was very weak owing to the altitude. To leave the machine he shifted the pilot's seat to the left, opened the door just sufficiently to allow his body to pass out, and then by slipping backwards on to the main wing strut, climbed on to the undercarriage.

W. Kerr practising a method of de-planing from a cabin machine prior to his parachute jump.

THE PARIS—SAIGON FLIGHT OF RENÉ LEFÈVRE

THE increasing interest in tourist aviation as well as in light planes in general, so noticeable during the past year, has been greatly stimulated by the successful solo flight Paris-Saigon (Indo-China), some 13,000 km. (8,200 miles), which has just been effected by the well-known French pilot, René Lefèvre. Piloting a small Mauboussin cabin monoplane, type II, fitted as a single-seater machine and weighing when empty but 700 lb. (320 kg.). Lefèvre traversed the 8,200 miles in 10 days 7 hours 50 minutes. The plane was equipped with a new type "Salmson" radial air-cooled engine of 45 h.p., which consumes at cruising speed but about 12 litres of petrol per hour. Lefèvre is thus well in line to win the cup offered by the President of the Republic (of France) to the light plane making the best record for the Paris-Saigon flight before January 1, 1934, a minimum of 15 days to make the trip being imposed.

When Capt. Leon Challe, also a well-known French pilot, using a plane equipped with a 450-h.p. engine, and accompanied by a mechanic, made this flight several years ago

PARIS SAIGON FLIGHT: René Lefèvre and the Mauboussin in which he flew from Paris to Saigon in under ten days.

in some 15½ days, he was hailed at that time as making an exceptional record.

Lefèvre flew on an average for 12 hours per day, at a rate of approximately 100 km. (60 miles) per hour. Taking off from the Orly (Paris) airport at 2.48 a.m., Sunday morning, December 18, he traversed the following route:—December 18, Orly-Marignane (Marseilles)-La Spezia; December 19, La Spezia-Brindisi-Athens; December 20, Athens-Crete-Tobruk; December 21, Tobruk-Cairo; December 22, Cairo-Damascus-Baghdad; December 23, Baghdad-Basra-Jask; December 24, Jask-Karachi-Hyderabad; December 25, Hyderabad-Allahabad; December 26, Allahabad-Calcutta; December 27, Calcutta-Rangoon; December 28, Rangoon-Bangkok-Saigon.

He arrived at Saigon at 6.10 p.m. local time (10.40 p.m. Paris time) on December 28, thus taking 10 days 7 hours 50 minutes in making this flight.

René Lefèvre is well known for his long-distance flights, being an excellent navigator as well as a successful pilot. As navigator of the plane *Yellow Bird*, he flew across the Atlantic in 1929 together with Jean Assolant and Armand Lotti, this machine being the first French plane to make the crossing. In 1931 Lefèvre flew from Paris to Madagascar, some 11,000 km. (7,000 miles) in 11½ days, piloting the same cabin monoplane in which he has just made the Paris-Saigon flight. After spending some time in Africa he flew back to Paris in the same machine.

The Mauboussin monoplane was described in FLIGHT for January 15, 1932, when Lefèvre made his Madagascar flight.

For the Paris-Saigon flight, however, Lefèvre had the machine fitted as a single-seater plane and additional fuel tanks installed in the wings, which raised the fuel capacity from 54 litres (12 gallons) to 140 litres (31 gallons approximately), thus increasing his flight radius from 500 km. (312 miles) to 1,500 km. (936 miles).

The new "Salmson" 9Ad, b 45-h.p. radial air-cooled engine was approved by the Service Technique during the month of August, 1932. The increase of 5 h.p. over the 40-h.p. engine has been obtained by raising the r.p.m. from 2,000 to 2,200.

This new engine is fitted with double ignition (two plugs per cylinder) instead of the single plug used on the 40-h.p. engine. It is also equipped with two "Salmson" magnetos of the new AT9, revolving magnet type, which weigh but 4,47 kg. (9 lb. 12 oz.) apiece, instead of the former type, which weighed 7,6 kg. (16 lb. 12 oz.) apiece, and only one of which is used on the 40-h.p. engine. It has nine cylinders, 70-mm. (2¾-in.) bore by 86-mm. (3⅜-in.) stroke, a cylinder capacity of 2,979 litres (182 cu. in. approximately) and a compression ratio of 5,6:1. The maximum h.p. developed is 55, and the fuel consumption at 2,200 r.p.m. is 15,5 litres (3.44 gall.) per hour (250 grms. per h.p./hr.); and the oil consumption 0.47 litre per hour (10 grms. per h.p./hr.). Shell Aviation Spirit and Golden Shell Oil were used on this flight.

It is reported that Lefèvre, after taking a short rest, may continue on to China and then return home by easy stages.

R. C. W.

The Breda 25 Trainer

THE well-known Italian aircraft firm of Breda, of Milan, recently produced a biplane, known as the "Breda 25," intended for advanced training. This machine, shown in the accompanying illustration, is a two-seater single bay tractor biplane, which can easily be converted from a land plane into a seaplane with twin floats; it can also be fitted with skis.

As a land plane it is equipped with 220 h.p. Armstrong Siddeley "Lynx" engine, but in the case of the seaplane a 240 h.p. Walter "Castor" is fitted. The seats are arranged in tandem, and dual control, which can be disconnected at will by the instructor, is provided.

The wings are of wood and steel construction, and the fuselage is of welded steel tubes. An oleo-elastic landing gear, with wheel-brakes, is fitted. Ailerons are fitted to the lower planes only. Fuselage, undercarriage and tail planes are interchangeable with those of the first training plane, the "Breda 26," from which the "25" differs in its smaller wing area and more powerful engine.

The characteristics of the two models of the "Breda 25" are as follows:—

	Landplane (220 h.p. "Lynx")	Seaplane (240 h.p. "Walter Castor")
Span of wings	32 ft. 10 in. (10 m.)	32 ft. 10 in. (10 m.)
Length overall	26 ft. 3 in. (8 m.)	24 ft. 3 in. (8 m.)
Height overall	13 ft. 1 in. (4 m.)	14 ft. 8 in. (4,50 m.)
Wing area	269 sq. ft. (25 sq. m.)	269 sq. ft. (25 sq. m.)
Weight empty	1,653 lb. (750 kg.)	1,940 lb. (880 kg.)
Useful load	551 lb. (250 kg.)	551 lb. (250 kg.)
Weight loaded	2,204 lb. (1.000 kg.)	2,491 lb. (1.130 kg.)
Wing loading	8·2 lb./sq. ft. (40 kg./sq. m.)	9·3 lb./sq. ft. (45,2 kg./sq. m.)
Power loading	10 lb./h.p. (4,55 kg./h.p.)	10·34 lb./h.p. (4,7 kg./h.p.)
Safety factor	11	10
Performances:—		
Speed max.	127 m.p.h. (205 km./h.)	118 m.p.h. (190 km.h.)
Cruising speed	100 m.p.h. (160 km.h.)	93 m.p.h. (150 km./h.)
Speed min.	43·5 m.p.h. (70 km./h.)	56 m.p.h. (90 km./h.)
Climb to 5.000 m. in	29 min.	to 4.000 m. 28 min.
Service ceiling	20,300 ft. (6.200 m.)	16,000 ft. (4.900 m.)
Normal range	310 miles (500 km.)	250 miles (400 km.)

Correspondence

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

AIR MAIL TO AUSTRALIA

[2815] We note the following statement published in your issue dated August 26 last:—

"An alternative scheme, in which it is understood that the Larkin Company is interested, is for the Dutch Air Service to extend its route to Wyndham."

We will be glad if you would publish a correction of this statement, as we have no interest whatever in the Dutch Air Service, except that we think their offer to carry our mails on a poundage basis without any guarantee and on the distinct understanding that they will make way for a British service when required, is a very attractive business-like proposition. Had it been accepted in July last there would now have been an air mail service between England and Australia, and we understand that the postal charge would have been only 1s. per letter. Another feature of this offer is that the present Vote for developing civil aviation in Australia would not be withdrawn to subsidise an Australian subsidy-monopoly-combine, which has already divided £750,000 in subsidies under circumstances which our Auditor-General recommends should be investigated.

J. H. LARKIN,
Managing Director,
Larkin Aircraft
Supply Co., Ltd.

Melbourne Aerodrome,
Melbourne, Australia.
November 22, 1932.

[In using the word "interested" we did not mean that the Larkin Company necessarily had a financial interest in the scheme; we understood that they approved and supported the idea of the Dutch company carrying the mails, and this letter confirms our view.—ED.]

[2816] In your issue dated September 9 you published an extract from the *Qantas Gazette*, quoting the Auditor General's criticism of the high cost of the Queensland air mail services operated by Qantas, Ltd., and also pointing out that in addition to the carriage of mails other reasons exist for the payment of a subsidy, namely the encouragement of outback air services and the value of civil aviation from a defence point of view.

The *Qantas Gazette* is also reported to quote the cost to the taxpayer of maintaining thousands of miles of railway lines.

I am directed to point out that this explanation is not considered adequate by the unsubsidised section of the industry in Australia, because the point at issue has not been answered, namely: Could these services be carried out with equal efficiency and at lower cost to the taxpayer if tenders were called for their operation and the lowest tender supported by the necessary substantial bonds to ensure due performance of the contract was accepted?

This convention has suggested to the Government that the time has arrived when tenders should be called for all this expenditure in order to remove the possibility of a few favoured concerns being placed in an artificial position from which they are able, thanks to the taxpayers' contribution, to undercut their less fortunate competitors. Instances can be quoted of deliberate undercutting of passenger fares with a view to destroying embryo competitors at birth.

I trust the foregoing will make clear to you the exact state of the aviation industry in Australia to-day.

W. R. GARRETT, Hon. Secretary,
First Annual Air Convention.

Melbourne, Vict., Australia.
November 24, 1932.

[2817] The article contained in your issue 6th ult. has been read with some astonishment. A number of the statements are contrary to fact, and in the interests of the development of aviation in Australia I wish to set out briefly the correct position.

Firstly, this Air Convention was conceived by Mr. H. B. Hussey, of Hussey's Service Station, 292, Glen Osmond Road, Fullarton Estate, South Australia, to whom we refer you for confirmation. Mr. Hussey is not connected in any shape or form with aviation at the present time, but has always taken an active part in any improvement calculated to develop the industry on sound lines. At considerable personal inconvenience he wrote a large number of letters to the aircraft industry, and suggested a "get together."

Capt. Larkin did not conceive the idea, but there would have been no discredit had he done so.

This Convention is representative of the opinion of 90 per cent. of the aircraft industry in Australia, the only exceptions being the few isolated subsidised concerns and Aero Clubs, all of whom have interlocking financial interests which makes them the equivalent of a monopoly under departmental control.

In your leading article you state:—"It was generally expected the contract from Camooweal to the railway head south of Darwin would be given to Qantas, who had done all the work in that region and had great experience of conditions and costs. To the surprise of everyone this contract was given to the Larkin firm."

The correct position is as follows:—Notwithstanding the Qantas' experience of conditions and costs, the Larkin company put in the lowest tender for the Camooweal-Daly Waters air service, and incidentally also for the Brisbane-Charleville service, tenders for which were called at the same time. To the surprise of the few who know, only one of the contracts was given to the Larkin company.

Qantas have only tendered for two aerial mail services, and on both occasions they submitted the highest tender, which was accepted. On two other occasions they have been granted aerial mail contracts by negotiation. All of these contracts have been renewed from time to time by negotiation.

Whilst on this subject I would mention that W. A. Airways, Ltd., also submitted the highest tenders for the North-West Coast service and the Perth-Adelaide air mail service, and in addition they have received two valuable air mail contracts by negotiation.

This Convention is opposed to Government expenditure under such conditions, and it endorses the Auditor General's strong comments and recommendation for an investigation.

The Civil Aviation Branch refuses to divulge the route earnings of the air mail contractors, but it is known that since inception most of the routes have only earned about £1 from freight and passengers for every £5 subsidy received. In some instances the position is much worse. Most deceptive statistics are issued by the Civil Aviation Branch showing the number of "stage passengers" and amount of "stage freight" carried on these lines. To arrive at this figure they multiply the number of passengers by the number of landings made by the machine in which they are carried; freight is treated in the same manner.

I trust you will give this correct information publication in your columns in order that your readers will not be misinformed.

W. R. GARRETT, Hon. Secretary.
First Annual Air Convention.

Melbourne.
November 30, 1932.

[We are quite aware that the lowest tenders for air mail contracts have not always been accepted by the Australian Government. We do not consider that this fact reflects discreditably on the Australian Government.—ED.]

[2818] We refer to your issue dated October 6, dealing with aviation in Australia, and hasten to forward you for publication the under-mentioned corrections of some of the mis-statements contained therein. We are concentrating on a few of the more glaring inaccuracies, but the whole tone of the article to which we refer is liable to create very wrong impressions.

1. This company did not refuse to fly the extra 50 miles from Daly Waters to Birdum, except under certain

conditions which were not accepted. This company was the first to suggest that the service should be extended to Birdum, but the Defence Department refused to grant us a conference, along with representatives from the P.M.G. Department, Commonwealth Railways and North Australia administration to even discuss the matter. Instead they insisted upon objecting to every constructive proposal put forward by us. At one stage agreement was reached on all points in dispute, and the Defence Department then promptly withdrew from the negotiations.

2. The Government did *not* send two "Wapitis" of the Royal Australian Air Force to carry on the mails to the railhead.

3. Capt. Larkin and his associates did *not* summon an Air Convention to decide upon a policy to lay before the Government. The Convention was the outcome of a circular to the industry by Capt. H. B. Hussey, of Adelaide, who at present and at that time had no connection with any commercial aviation company whatever. The Larkin Company is a member of the Convention, along with the majority of other aviation interests in Australia, and supports its policy, which was endorsed by an overwhelming majority at a recent referendum conducted throughout the whole industry in Australia.

4. The Association of Australian Aviation Industries is not truly representative of the aviation industry in Australia. We are unaware of any meetings being held by that body since its inaugural meeting on June 28, 1932, and our repeated efforts to ascertain details of the activities of that body, to which this company and many others consider they are entitled to belong, have failed. We state very definitely it is our belief that this newly-formed body is in substance the mouthpiece of the two or three monopolies now enjoying the almost exclusive benefits of the distribution of the whole of the Australian civil aviation vote.

In order that our policy might be set out quite clearly for the benefit of your readers, we would make the following very definite statements:—

(*a*) We favour the calling of tenders for all Government expenditure.

(*b*) Bonuses to newly-trained pilots should be payable to the pilots themselves and not to Aero Clubs or any other bodies. This will permit the pilots to spend their bonuses where they get the best service.

(*c*) We advocate that steps should be taken by the P.M.G. Department and the Civil Aviation Branch in co-operation to utilise aircraft for the carriage of mails on services other than railways for which over £300,000 has been allotted this year. There are many motor and pack-horse mail services in Australia which could be advantageously replaced by aircraft.

(*d*) We are opposed to subsidies exceeding the other gross earnings from air transport by any aviation concern.

(*e*) We favour an England-Australia air mail connection, because we think tnere would be sufficient air mail matter available to make it self-supporting from the outset, provided small mail-carrying aircraft are used in preference to mammoth passenger-carrying machines which will certainly fly almost empty until they rapidly become obsolete. Pending the establishment of such a service, we favour the acceptance of the Dutch offer to carry our mails as they have been carrying other British mails along their route. In this way we would ascertain without cost the exact weight of mails offering and provide aircraft with the appropriate carrying capacity.

We invite the so-called Association of Australian Aviation Industries to state its policy on the above five points. To date no public expression of its policy has been heard, and a challenge from the Secretary of the Air Convention to answer six leading questions has been repeatedly ignored.

Thanking you in anticipation of your correction,

LESLIE M. MACPHERSON,
Chairman of Directors,
Larkin Aircraft Supply Co., Ltd.

Melbourne, Vict., Australia.
November 24, 1932.

[While publishing this letter, we do not admit "glaring inaccuracies" in our article of October 6, and we have good reasons for believing that "the whole tone of the article is liable to create" not "very wrong impressions," but correct impressions. In our correspondent's letter, Para. 1 is so vague that comment on it would be valueless. It was the intention of the Government to send R.A.A.F. machines to bridge the gap. Whether it was bridged by Government aeroplanes or cars is a minor point. The important point is that the gap existed. Regarding Para. 3, we are not interested in the writer of the first invitation to the Air Convention. Of the 10 men on the committee of the Convention, one was Capt. Larkin himself, another was our correspondent Mr. L. M. Macpherson, a third was our correspondent Mr. R. W. Garrett, a pilot of the Larkin firm, and a fourth was Mr. B. Murray, another Larkin employee. We disagree with the statement in the first sentence of Para. 4. Finally, we are not surprised that the Association should have ignored the "challenge" of the Convention.—ED.]

CHEAPER LIGHT AEROPLANES

[2819] I feel I must write and bring up the question of the light aeroplane. It appears to me that such a thing doesn't exist. It is true that a few firms such as de Havilland's and Avro's build what they call "light" aeroplanes, but they proceed to equip them with 100-h.p. (or more) engines and put them on the market at prices ranging from about £600 and upwards. Do they imagine that the average man has suddenly inherited a fortune? If not, who are these machines intended for?

I have a great many friends who, like myself, can just afford to fly, but we cannot possibly afford to buy the machines which we are taught in and are accustomed to handle. If we cannot buy them, who will?

The high cost is, of course, partly caused by Air Ministry regulations, but these do not require a 100-h.p. engine, nor a cruising speed of 90 m.p.h. Up to now one has accepted the situation as inevitable, but now that some experimenters have started messing about with 6-h.p. engines I feel that one cannot take it lying down any longer. I use the words "messing about" for the simple reason that I consider experimenting with an aeroplane (and it is an aeroplane) which will never be allowed to leave the precincts of the aerodrome *is* messing about. At the Lancashire Aero Club the chief instructor, Mr. George Yuill, always says (and quite rightly) "Don't hang about the aerodrome doing nothing; either go up and practise aerobatics or go on a definite cross-country. Doing circuits round an aerodrome never made a pilot out of anybody." And now, I see in the papers, a motor-assisted glider (what *is* this?) has been produced which will not be allowed to leave the aerodrome.

What has happened to 20 h.p. or even 30? Why this extraordinary "leap" from 100 h.p. to 6? It is no excuse to say there are no aero engines built of that h.p.; of course there are not if there are no machines designed that need such an engine.

I do not intend to go into technical details; at this stage they would be superfluous, but I am confident there is a demand, and a machine could be built something on these lines:—Two-seater, and a little luggage; 25 h.p.; cruising speed, 60 m.p.h.; range, 300 miles; price (approx.) £300.

There has been a list recently in one of the flying papers entitled "What to buy for 1933." The average price of these machines is £1,180. There is only one below £600, the Comper "Swift," a single-seater, and the average Britisher is not such a selfish and unsociable animal that he would spend £600 in order to take himself about the country alone.

I am prepared to admit, especially since reading your article recently published "Strangling Private Flying," that Air Ministry regulations will make it difficult to get the price down to £300. Another reason for the present high price is, of course, the small market, but this will not increase until a small machine is made with lower running costs and a much lower list price.

I shall be grateful if you can publish this letter, as I feel very strongly that it is a matter that wants ventilating. I quite realise that my knowledge of this subject is, of course, limited, and I have only covered a small part of the ground, but it may possibly start a discussion on the right lines and among the right people.

ARTHUR F. GOTCH.

Kettering,
December 31, 1932.

Air Transport

SIR ERIC GEDDES ON AIR PROGRESS

SIR ERIC GEDDES, chairman of Imperial Airways, Ltd., left London on December 27 to inspect the African airway. He intended to visit Rome to discuss some international aspects of air transport. "This," said Sir Eric, "is one of the most important questions with which civil aviation has to deal. It is vital to air transport development on a widespread scale that restrictions and hindrances which now cause difficulties and delays should be swept aside as between nation and nation, and that every facility should be accorded on an international basis to the operation of trunk air lines which have to pass over a number of different countries.

"It is of great satisfaction to us that our African air route should be operated already with such success. During the recent period of three months traffic over the route has increased by approximately 50 per cent., while from the all-important aspect of dependence in operation our latest figures show that the air mail is flying with a reliability of 99 per cent. in northern sections and 100 per cent. in the south.

"Actually the development of this route is proving conclusively the necessity, which I have emphasised more than once, for co-ordination and centralising the control of long-distance air lines. Already, for example, traffic has grown to such an extent in northern sections of the route that the original seating capacity has had to be almost doubled, and with our central control system we have been able to deal with this very encouraging development by switching over to these sections of the route machines of our fleet which have larger seating capacity than those previously in use. It is now expected that traffic progress in southern portions of the route may in due course necessitate the employment of aircraft of a larger capacity, in which case we shall have no difficulty in dealing with the situation. One of the most gratifying features of recent air transport development is that often in face of such difficult conditions as have existed economically traffic should be increasing rapidly, not only as regards our Continental air lines, but also on those trunk routes which extend across the Empire.

"We are now operating 12,000 miles of Empire airways, and it is hoped that during this next year the through route to Australia may be in operation. Already our machines are flying approximately 6,000 miles a day, and at almost every hour of the 24 somewhere along our far-flung routes we have a mail-carrying machine in the air.

"Generally speaking, the outlook for air transport is now definitely encouraging, but we cannot expect any specific short cuts to success. Air mail flying is governed by the laws of economics. It must develop logically. It must go forward step by step establishing itself on a basis from which nothing can shake it.

"British civil aviation is making admirable progress in difficult times. Our figures for air income in relation to subsidy show consistent improvement. Our rates are among the lowest in the world; our air-liners carry bigger average loads and cover a bigger average mileage per machine than thase of any other nation.

"The taxpayers of this country in their assistance of civil aviation, are, in fact, obtaining better results than those of any other country in the sense that British commercial flying is now approaching more nearly than the air transport of any other nation the goal of independent State-free operation."

Flying Accidents in 1932

IN the year 1932 there were 32 fatal accidents in the Royal Air Force, which resulted in 48 deaths. We give below the comparative table for the last five years:—

	Fatal Accidents	Deaths
1928	50	76
1929	31	42
1930	45	65
1931	45	75
1932	32	48

Considering the increase in flying hours each year this improvement shows how much safer flying is becoming, though there is no accounting for exceptionally bad years like 1931 or exceptionally good years like 1929. In civil flying there were during 1932 13 fatal accidents which caused 17 deaths. None of these accidents occurred on British regular air transport.

Airship Development

DR. ECKENER has left Friedrichshafen for Port Said and the Dutch East Indies. It is reported that he is going on behalf of a Dutch group to study the possibilities for airship communication between Holland and Dutch Colonies.

ITALY'S DoX: The Italian Government's Dornier DoX, which is named "Umberto Maddalena," is here shown being refuelled at Syracuse with Shell Aviation Spirit and Aero Shell Oil.

Airport News

CROYDON

HUNDREDS more than the normal number of passengers made use of the air services during the few days preceding Christmas.

On Friday, December 23, Imperial Airways, SABENA and Air Union doubled all their services. The latter, who sent all their 'planes to Paris, were compelled to stop booking any more for that day. It was estimated that 90 per cent. of the travellers had booked return tickets. Altogether, no less than twenty-eight air-liners arrived and departed from Croydon.

Saturday proved to be a red-letter day for the Air Port. It was the busiest Christmas Eve on record. In all, over 300 passengers flew in and out during the day. They were conveyed in 32 air-liners and there was not a vacant seat in any of them. The air line companies' passenger motor coaches were racing to Croydon and back again to the West-End all the day, while air-liners were entering and leaving the Air Port at frequent intervals. At one time there was not an air-liner left at Croydon, and 'planes arriving from the Continent were turned about immediately to make return journeys—mostly to Paris. It was estimated that there were twice as many passengers this holiday than there were for the corresponding period of the previous year, and that four times as many flew to the South of France and Switzerland. In addition to the regular service passengers, several private parties of three and four chartered special aeroplanes.

Following the rush, aviation was brought to a standstill owing to a dense fog, which continued throughout Christmas Day and Boxing Day—there were no air services during either of these days.

On Thursday, December 29, a large party of South African school boys paid a visit to the aerodrome, making a tour of the hangars, followed by a short flight.

It is anticipated that during 1933 there will be a general speeding up of the Continental air services—mainly due to the use of faster aircraft—which are shortly to be placed on many of the routes. Vienna, which has hitherto been a two days' journey by air from Croydon, will, when the summer services are in operation, be reached in one day. A corresponding saving of time will be made on a great number of other routes—one in particular will be the Croydon to Amsterdam K.L.M. service, which will be reduced to 90 min. A fleet of new Fokker air-liners, at present in course of construction at the Fokker Aircraft works in Holland, have been ordered by the Royal Dutch Airlines (K.L.M.) and will be placed on service between London and Amsterdam early next spring. These monoplanes will be known as the F.20 type and will have three Pratt & Whitney "Wasp" engines, each of 550 h.p. They will also be fitted with retractable undercarriages, have accommodation for sixteen passengers and a crew of four, and fly at a top speed of 176 m.p.h., while the cruising speed will be 156 m.p.h.

In addition to these, a fleet of even larger and more luxurious 'planes—the F.36 type—will be placed on the London-Batavia service. They will carry 32 passengers and four crew while operating in Europe, and 16 passengers plus 1,500 lbs. of mail on the Eastern service. They also will have retractable undercarriages and the same speed as the F.20's, but will have four Pratt & Whitney "Hornet" engines, fitted with electric starters. The cabins will be almost noiseless and will be equipped with luxurious lounge chairs—the very latest type of navigation instruments are to be installed, adding greatly to safety while flying in bad weather.

It is intended that the new air-liners will reduce the present time taken from Amsterdam to Batavia of eleven days to six days, and that London to Batavia—a distance of 9,000 miles—will be covered in seven days.

The total number of passengers for the week was 1,061. Freight, 43 tons 10 cwt.

HORATIUS.

FROM HESTON

ON Monday, December 19, several private owners returned from week-end air tours and among our visiting machines were two "Puss Moths," two "Moths," three "Avians," one D.H.53, one Parnall "Elf," one "Spartan."

On Tuesday, December 20, Lt. Col. Shelmerdine, the Director of Civil Aviation, visited Heston. Lord Apsley left for Romford in his Parnall "Elf" with one passenger. A Farman (F-AJBS) arrived from Paris with four passengers. Herr Kirsch left for Cologne, via Brussels, in Hirth Klemm D.2328, while a "Puss Moth" of Hillman's left for the Isle of Sark with two passengers.

Wednesday, December 21, being another summer-like day, the Flying School were able to put in a considerable number of hours flying. Flt. Lt. Ivins left for Jersey in his Bristol Fighter (Rolls-Royce). A. Hillman's "Fox Moth," piloted by Mr. Easdown, left for Geneva with two passengers.

Early Thursday morning, December 22, Mr. Carey Foster left for Paris, *en route* for Egypt, in an "Avian," the property of Flt. Lt. Atcherley, now stationed at Amman, Transjordania. Heer Ten Bos, who is a frequent visitor at this aerodrome, left for Twenthe with one passenger in his "Pander." The Farman F-AJBS left for Paris with four passengers. Among the visiting machines were five "Moths," three "Avians," one "Avian" Sports monoplane, one "Spartan," one "Puss Moth."

Capt. Birkett, of B.A.S., was off at 7 a.m. on Friday, December 23, with one passenger who had to be in Paris by 10 a.m.; he returned later in the day.

Capt. Mark Diamant made a round of visits in Dominion Spirit Co.'s "Puss Moth." Mr. J. D. Coles arrived from High Post in his "Moth" ("Cirrus"), and left for Le Bourget, *en route* for Switzerland, accompanied by F/O. Edwards.

On Saturday, December 24, although the Flying School was closed, several private owners took advantage of the nice day to take the air, while others left for various destinations to spend Christmas. Sunday and Monday were impossible days for flying, but numerous small parties took the opportunity of inspecting the airport.

Tuesday, December 27.—Capt. Birkett, of Birkett Air Service, cleared Customs on arrival from Paris in a "Puss Moth."

The Flying School reopened on December 28 with an excellent start as the first pupil—Mr. C. E. Phillips—who had not flown for some considerable time, after only 15 min. further dual instruction made a beautiful first solo. Herr W. Hirth, who has come over to lecture on gliding, cleared Customs on arrival from Brussels in a Hirth "Klemm" D.2121 and Mr. Stark, with one passenger, cleared Customs, having arrived from Ostend in a "Bluebird." Sir John Carden, Bart., did some very pretty flying around the neighbourhood of the airport in his Pobjoy "Klemm" G-ABZO.

Thursday, December 29, was a fairly quiet day. Visiting machines included two "Moths," two "Avians," two "Klemms," one "Puss Moth," one "Comper" and one "Spartan."

On Friday, December 30, the Flying School was able to carry out some instruction during the morning, but rain just after 1 p.m. stopped flying for the remainder of the day. Banco's "Puss Moth" G-AAXX cleared Customs on arrival from Paris, having made the journey in exactly 2 hr.; Flt. Lt. Ivins arrived back from Jersey.

Saturday, December 31, with quite nice flying weather enabled the Flying School to finish the year with a good day's instruction. One pupil carried out his "Figures of 8" and "height test" for his "A" licence. Mr. Samuelson arrived from Paris in "Gipsy III Moth" of Standard Telephone Co.

During the past year the number of Customs clearances totalled 993, which is a considerable increase on the previous year.

Sunday, January 1, did not give the best of weather for the first day of the New Year, but between the heavy showers some instruction was possible. The Household Brigade Flying Club machine was in continuous use during the afternoon by members of the Club.

Airisms from the Four Winds

Lady Bailey to Attempt Cape Record

LADY BAILEY, the wife of Sir Abe Bailey, will shortly attempt to beat the record for the flight to Cape Town. She will use the West Coast route and is at present only awaiting favourable weather. As everyone will remember, Lady Bailey made a magnificent flight round Africa in 1928-29, her 18,000 miles flight being by far the finest achievement yet accomplished in the air by a woman, and likely to remain so for some time. With luck Lady Bailey should stand an excellent chance of lowering the record.

A New Cross for the "Southern Cross"

AIR COMMODORE SIR CHARLES KINGSFORD-SMITH hopes to commence his flight to New Zealand on January 10, flying his famous machine *Southern Cross*; the Grand Old Veteran (the machine, not the Air Commodore) will carry a crew of three.

"Houston" Mount Everest Flight

FURTHER details are now to hand of the machines which are being used by the Committee for the flight over Mount Everest. In FLIGHT for December 8 we were able to announce that two machines manufactured at the Westland Aircraft Works, Yeovil, were to be used. The first of these is one of the P.V.3 type and the second of the "Wallace" type. The former is an all-metal two-seater biplane designed for high altitude general purpose requirements, while the latter, also an all-metal two-seater biplane, is the standard general purpose machine as now being supplied to the Royal Air Force. Both these aircraft will use supercharged Bristol "Pegasus" engines and will have an operating ceiling of over 33,000 ft. Several modifications are necessary to both machines to fit them for this task, and the Westland Works are at present busy on them.

Sir Philip Sassoon's New Appointment

THE RIGHT HON. SIR PHILIP SASSOON, BT., G.B.E., C.M.G., M.P., has been elected Chairman of the National Gallery Board in succession to The Right Hon. Lord Lee of Fareham, G.C.B., G.C.S.I., G.B.E.

Another Italian Claim

FROM Rome comes the report that a Sardinian pilot, Furio Niclot, has attained a height of 26,900 ft. in a light seaplane, which he claims to be a record for that class of machine. The report adds that Niclot used the same machine as did Donati in his recent flight, except that he put on floats in place of wheels, modified the wings and fitted a new engine.

Inverted Flying

M. MICHEL DE TROYAT, flying his own machine, fitted with a 230 h.p. engine, at Villacoublay recently remained for 26 min. 2 sec. upside down. The machine was fitted with a special carburettor, and the pilot stated that for the first ten minutes he felt quite normal, after which to keep control of the machine was none too easy.

Gold Prospecting by Air

FROM Australia comes the report that three airmen, Baker, Whelan and Stalkey, have been searching for a famous, and perhaps fictitious, gold reef. The airmen made a forced landing in the desolate Livesey Range, the machine being overturned and damaged. Crude local wood was used for repairs, but the machine would not leave the ground; so one of the party volunteered to stay behind while the other two returned to civilisation, at Cook, and, of course, immediately arranged for a relief machine to be sent out to the marooned member of the party. The relief aeroplane located him, and dropped a supply of food and water. A bare statement of fact behind which is probably a gallant story of heroic self-sacrifice in keeping with the tradition which airmen throughout the world have built up for themselves.

Aeronautical Exhibition at Selfridge's

AN exhibition of aeronautical and general engineering exhibits will be held on the fourth floor of Selfridge's, Oxford Street, commencing on January 9, for two weeks. The aeronautical exhibits will include a Rolls-Royce "Kestrel" engine sectionised. Vickers Aviation are loaning the Schneider Trophy machine. Fairey Aviation will exhibit metal propellers, the De Havilland Technical School a "Gipsy" engine sectionised, and ¼-scale model of a "Puss Moth." The Bristol Aeroplane Co. are loaning a "Pegasus" sectioned engine, and Handley Page, Ltd., will give wing slot demonstrations. The Royal Aero Club and Aero Films are sending aircraft photographs and views together with ten films of aircraft and various flights, etc. There will also be exhibits of various instruments and meteorological appliances.

R.Ae.S. Informal Debate

ON Monday, January 16, the Royal Aeronautical Society is to experiment with a new idea. On that date an informal debate will be held at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, in order that many aspects of civil aviation may be discussed more freely and over a wider range than is possible in a more formal set lecture where the subject is more limited. The origin of the debate lies in the great interest shown in the recent lecture by Mr. H. G. Travers on Civil Primary Training and the demand for a further discussion on the subject. A number of prominent designers, pilots and others have promised to be present and to take part in the debate. The following motion will be proposed: "Civil Aviation Differs from Military Aviation and should be Treated Accordingly." The motion is drawn in wide terms so that the following controversial points raised in Mr. Travers' lecture may be debated: (1) The control and regulation of civil aircraft—national and international. (2) The design of civil aircraft from a national and international (disarmament) point of view. (3) The training of civilian pilots. (4) The costs of civil aviation. It is hoped that all those interested in the future of civil aviation will attend the debate so that as representative a discussion as possible may take place. The chair will be taken at 6.30 p.m. by the President of the Society, Mr. C. R. Fairey.

"Airship Development Abroad"

ON Thursday, January 12, 1933, Sqd. Ldr. R. S. Booth, A.F.C., R.A.F., will lecture on "Airship Development Abroad" before the Royal Aeronautical Society. The paper will deal with the rigid airship development in Germany and America since the war, giving a brief description of all ships built, with their performance and subsequent achievements. The history of the *Graf Zeppelin* will be dealt with at length, and general details of the German ship now under construction will be given. In America, special mention is made of the recent development in ground handling equipment, which appears to have almost solved this most difficult problem, and also of the aeroplane-carrying arrangements in the *Akron*. The text will be freely illustrated with a number of lantern slides, and at the conclusion of the lecture a film will be shown illustrating the construction and trials of the *Akron*. The lecture will be delivered at 6.30 p.m. in the Lecture Hall of the Royal Society of Arts.

"Fuel Injection"

ON January 10 Mr. C. W. Lawson will deliver a lecture on "Fuel Injection in Compression Ignition Engines" before the Students' Section of the Royal Aeronautical Society at 6.30 p.m. at 7, Albemarle Street, London, W.1.

Suggested Aircraft for Kenya

THE issue of *East Africa* for November 17 suggests that bombing aeroplanes should be used for co-operation with the King's African Rifles. There is much to be said for this suggestion, especially in view of the numerous raids which have occurred lately by tribesmen from Ethiopia into the Sudan and Kenya. The very fact that aeroplanes are available has sufficient moral effect of a deterrent nature to prevent most raids from getting beyond the stage of suggestion.

Guild of Air Pilots and Air Navigators

ON Monday, January 9, the next monthly discussion will take place at 8 p.m. at the Williamson Restaurant, Bow Lane. The discussion will be "Who should determine whether to fly, should it be the pilot?" M. Bouderie, manager of the Air Union, has very kindly consented to initiate the discussion, which promises to be a very interesting one.

No. 25 (F.) Squadron, R.A.F., Re-union Dinner Postponed

No. 25 (F.) SQUADRON'S Re-union Dinner for all past and present officers of the Squadron which was announced to take place at the May Fair Hotel on January 6, 1933, has now been postponed until Friday, March 3, 1933.

The Industry

ARMSTRONG-WHITWORTH AND ARMSTRONG SIDDELEY ACTIVITIES

ARMSTRONG-SIDDELEY MOTORS, LTD., of Coventry, send us the following information regarding their activities during 1932, which we think will be of interest to our readers.

During the period under the review, Sir W. G. Armstrong-Whitworth Aircraft, Ltd., have been busily engaged in building the new fleet of "Atalanta" four-engined commercial monoplanes intended for service on the African route of Imperial Airways, Ltd. The last of the eight machines forming this order is now practically complete.

Apart from this work, the manufacture of the improved Mark II "Atlas" general-purpose aircraft and A.W. XVI single-seater fighter has proceeded as usual and a number of both of these types of machines have been sold abroad. The A.W. XVI has also been tried with satisfactory results by the Fleet Air Arm, while the same machine in a modified form was supplied to the special order of Sir Alan Cobham for use in inverted flying and aerobatic displays in the course of his two months' air tour of 70 South African towns.

An important modification to the Mark II "Atlas" embracing the addition of ailerons to the lower planes to improve the control necessitated this fitting being carried out on large numbers of machines used by the Royal Air Force, and this with a great deal of experimental and research work in connection with new designs has kept the factory busy. Lastly, a good deal of work has been done in connection with the design and production of stainless floats.

Armstrong-Siddeley Motors, Ltd., recognised a year or two ago that there would eventually be a demand for an air-cooled aero engine round about 650 h.p. Their reply to this demand has taken the form of the 640-h.p. 14-cylinder "Tiger," which during the past year has been perfected and completed all its tests. This engine, which is now in production, has been received with enthusiasm. It takes its place in the Armstrong-Siddeley range between the 535-h.p. "Panther" and 800-h.p. "Leopard," and is intended for powering general-purpose and torpedo-carrying aircraft, flying boats and civil aircraft.

Its design takes advantage of the experience gained in the manufacture of the "Panther" engine. The valve rocker gear and push rods are enclosed, thereby rendering the engine clean in service and very neat in appearance. New features are the incorporation of the oil pump within the front cover, the fitting of a duplicate diaphragm type of petrol pump and the addition of cowls which direct the air round the backs of the cylinder barrels. The latter are of new design, the fins being more numerous, shallower and more closely spaced than on the earlier types of engine. The finning of the head has also received special attention, and every provision has been made to allow the air free passage between the valve chests. By this means cooling efficiency is increased and uniformity of temperature attained.

The valve rockers are mounted on two rows of ball bearings, while the outer race of the roller bearing at the valve stem end is free to rotate and operates the valve. The other end of the rocker also incorporates a roller bearing, the outer race of which is formed integral with the push rod. Three valve springs are standardised.

A new feature of the design is the fitting of a patented form of starting gear, which enables the engine to be started by electric starter and/or by hand. The starter can be run off an ordinary W.T. 12-volt battery or the service battery can be plugged into the circuit, a special advantage of the system being its light and compact design, increased convenience, ease of maintenance and very low maximum normal current consumption.

Production of the standard Armstrong-Siddeley engines, which vary in power from 80 to 800 h.p., and from 5 to 15 cylinders, has been well maintained.

The 535-h.p. 14-cylinder "Panther" in its latest form continues to extend its field of usefulness. The 215-h.p. 7-cylinder "Lynx" has again proved its invaluable qualities for training purposes by being adopted as standard for the training aircraft of the Royal Air Force. At the same time, it still retains its popularity for other purposes where an engine of about its power and size is required.

The 340-h.p. 10-cylinder "Double Mongoose," which is the engine chosen by Imperial Airways for their new fleet of "Atalanta" type four-engined monoplanes, are in full production, and are also being used for powering flying boats.

Coming now to the smaller and lower powered engines, the outstanding success of the 140-h.p. 7-cylinder "Genet Major," which was fitted in the R.W.D.6 aircraft which won the round-Europe flying competition last summer, has undoubtedly done a great deal of good in popularising British aero engines on the Continent.

Generally speaking, all markets have been extended, and in particular encouraging business has been received from Brazil, China, Finland and Norway.

"Empy-Gee"

NOVELTY is the keynote in modern advertising, and we have it manifested in the latest idea emanating from National Benzole, Ltd. It is a cardboard game, superficially resembling snakes and ladders, called "Empy-Gee." It is played by moving cardboard cars over a network of roads to a final destination in obedience to the spin of a numbered top and a variety of obstacles placed along the roads. Application for a copy should be addressed to the publicity department of the company at Wellington House, Buckingham Gate, S.W.1.

Cold Starting Tests

AT the works of the Bristol Aeroplane Co., Ltd., a large electric refrigerating chamber has been installed in which the temperature may be reduced to minus 15 deg. C., equal to 27 deg. F. of frost. Starting tests are made on engines which have remained in the refrigerator over night, and valuable data is obtained.

Aerodrome Development

DURING the past year Hunters of Chester, the aerodrome specialists, completed the "Hunterisation" of Portsmouth Airport, which was officially opened by Sir Philip Sassoon on July 2. The airport measures 1 mile in length and has excellent approaches over the water, whilst viewed from the air it is perhaps, for easy detection, second only to Ryde (Isle of Wight) Airport, which was started in April by the same company and completely "Hunterised" by August, since when 5,000 passengers have utilised it whilst patronising the Spithead-Ryde air ferry to the Island, which have been operated with "Wessex," "Monospar," "Spartan" and "Moth" aircraft for an overwater trip of 6 miles.

Other aerodrome contracts handled by Hunters have included Woodford, near Manchester, where numerous marl pits had to be filled, and a peat bog extending to 4 acres entirely roofed in with material taken from the adjoining hillside. Shanklin (Isle of Wight) Airport has been surfaced in necessary places, while a similar operation has been carried out over the southern half of Gatwick Airport, which is naturally patronised very much by jockeys and racegoers, for it adjoins the racecourse of Gatwick. Surfacing work is at present being done by Hunters on portions of Heston Air Park. Thus in a year of unparalleled economic depression the aerodrome problem is not being overlooked as one might expect from the past indifference to this national need.

Dunlop Production Maintained

IN New Year messages to the workers of the Dunlop Rubber Co., Ltd., Sir Eric Geddes, chairman, and Sir George Beharrell, managing director, express confidence in their efforts to come, and mention that the output in the company's factories has been maintained during the past year and even increased in some cases.

R.A.F. AIRMEN

New Classes of Fitters and Mates

THE following is a summary of Air Ministry Order A. 364, in which an important scheme of re-organisation is laid down. All airmen should study the Order carefully, but they will find it easier to understand it after reading this summary:—

1. *General.*—For some time past the Air Council have had under review the trades organisation of the Royal Air Force and the prospects of promotion and career which that organisation yields for serving airmen. The review has now reached a stage at which it is possible to announce a revised scheme for fitters aero and riggers, who form the largest class of skilled men, and also certain decisions of wider application. These are summarised below. The review is still proceeding in the case of other classes of airmen, and the decisions taken in their cases will be notified at a later date.

2. *Fitters (Aero) and Riggers.*—It is a standing principle that each aircraft should have allotted to it skilled personnel who have an individual responsibility for its efficient maintenance. At present each aircraft is allowed one aircraftman who is a fitter (aero), and a second aircraftman, who is a rigger. In view of the technical changes in the last ten years—notably the introduction of metal aircraft and the increased reliability of engines—the Council are satisfied that by the modifications in training and organisation outlined below, it is possible to reduce the number of skilled men required in flights without loss of efficiency or impairing the principle of individual responsibility for aircraft.

3. *New Organisation.*—Under the new scheme, the fitters and riggers allotted to machines in flights will be replaced by a new type of tradesman, to be known as a Fitter, Grade II. This new type will be recruited as aircraft apprentices and trained at Halton to perform all the work now undertaken *in flights* by the present fitter and the present rigger. (The apprentices entered during 1932 and those entering next month will be trained on the new basis.) One such fitter will in future be allotted to each aircraft and he will be assisted by a new class of airman—to be known as Mate—who will undergo a short training in the relatively limited functions required of him. The responsibility for the safety of the aircraft will, however, rest entirely with the Fitter, subject to the supervision of his superiors.

After a period of about three years' service in flight duties, the Fitter II will be given an advanced course in fitting and rigging duties at Halton. On completing this successfully, he will be graded as a Fitter, Grade I, and will be eligible for employment *in workshops*. When the Fitter I is promoted to non-commissioned rank, he can be employed as such either in a flight or in a workshop.

The allocation of Fitters I in workshops will be on the general basis of one aircraftman Fitter I for each two fitters or riggers at present allowed; each Fitter I will be assisted by a mate.

The number of skilled N.C.O.'s both in workshops and in flights will remain as at present, and all will have passed the advanced course referred to above.

In addition one of the non-technical aircraftmen in each flight will be upgraded to corporal to relieve the technical N.C.O.'s of part of the non-technical supervisory duties that now fall to them.

4. *Introduction of the New Scheme.*—The reorganisation of the units will begin in 1935, when the new Fitters II first become available, and will be completed gradually. Each year a group of units will be chosen for reorganisation; the change-over will take about two years to complete in each case.

Until the scheme is in full operation the Fitter I posts will be filled by existing fitters and metal riggers, who will be given a conversion course, extending over one year, to fit them for their new duties.

5. *Some General Features of the Reorganisation.*—The reduction in the number of skilled aircraftmen required under the new scheme will have the following advantages:

(*a*) It will enable them to be employed more exclusively on work of a character to demand their skill; this will directly promote efficiency.

(*b*) Promotion will be available to fitters who are suitable for the responsibility at a time when their accumulated experience qualifies them to exercise that responsibility.

(*c*) As stated in the order, the number of men allowed to re-engage must be restricted, partly in the interests of the men themselves; otherwise there would be serious stagnation in promotion to N.C.O. ranks and to Warrant Officer.

The resulting position as regards promotion prospects, re-engagement, and re-settlement in civil life, is given in some detail in the following paragraphs.

(*d*) The scheme will be introduced gradually and with the strictest regard to efficiency and safety of aircraft.

6. *Career of Fitters.*—The actual course of promotion must necessarily depend on the requirements of the service, and there are certain abnormal conditions affecting promotions which will not pass away for some time. Subject to this, however, the general policy for the future, when conditions are normal, may be stated broadly as follows:

(*a*) All suitable Leading Aircraftmen will be promoted to Corporal.

(*b*) A majority of corporals will be promoted to sergeant during their initial period of engagement.

(*c*) Of the restricted number of men selected for re-engagement, a majority will be promoted to flight sergeant in the earlier part of their re-engaged service.

(*d*) A substantial minority of flight sergeants will be promoted to warrant officer.

7. *Position of Airmen not Selected for Re-engagements.*—Notwithstanding the improvement over present prospects resulting from the new scheme, the number of re-engagements to be approved each year must be restricted, and it has been decided to make special provision for further *reserve* service in the case of those who cannot be re-engaged or do not desire to re-engage. Accordingly, *ex-apprentice* airmen who complete their initial engagement of 12 years on or after January 1, 1933, to the satisfaction of the Air Council may engage in the Reserve for four years on special financial terms. These terms, which include a gratuity of £100, will greatly assist these airmen in their resettlement in civil life and the scheme will at the same time provide the service with a reserve of skilled airmen with apprentice training.

Airmen accepting this reserve engagement will receive a gratuity of £100; this will be in lieu of the ordinary discharge gratuity of £1 for each year of service and of ordinary reserve pay for the first three years of their reserve service. During this period also they will normally be excused reserve training. In the fourth year they will be liable for training and will receive reserve pay at the current rate—at present 9d. a day.

The above conditions will be applicable to all ex-apprentice airmen of Group I and not only to ex-apprentice Fitters.

8. *Abolition of the Rank of Warrant Officer, Class II.*—The rank of Warrant Officer, second class, will in due course be abolished throughout the Royal Air Force. No further promotions will be made to the rank, and it will be regarded as obsolescent. An establishment will be laid down for the new rank of "Warrant Officer," which will exceed the existing establishment of Warrant Officer, first class, and will be brought into operation by gradual stages. Existing Warrant Officers first class, will be immediately absorbed into the new rank; existing Warrant Officers, second class, will be eligible, together with flight sergeants, for promotion to Warrant Officer. Until so promoted, Warrant Officers, second class, will, of course, be carried in their present rank and on their present rates of pay.

THE ROYAL AIR FORCE

London Gazette, December 27, 1932

General Duties Branch

The follg. Pilot Officers on probation are confirmed in rank :—J. J. A. Sutton (Nov. 29) ; L. W. Oliver (Dec. 6) ; R. C. M. Collard, W. R. Cox, F. W. Dixon-Wright, P. I. Harris, W. P. Harvey, T. F. U. Lang, R. S. Ryan, W. S. P. Simonds, A. W. Sweeney, J. R. Talbot, A. P. S. Wills, and G. P. Woodhouse (Dec. 28). Acting Pilot Officer on probation C. S. Byram is graded as Pilot Officer, on probation (Dec. 19).

Flying Officer D. C. J. Miller is granted honorary rank of Flight Lieutenant on promotion to rank of Captain in his regiment (17th/21st Lancers) (Oct. 14). Fl. Lt. H. M. Groves is placed on half-pay list, Scale B, from Dec. 24, 1932, to Jan. 8, 1933, inclusive. Lt.-Cdr. A. M. Kimmins, R.N., Fl. Lt. R.A.F., relinquishes his temp. commn. on retirement from the Royal Navy (Dec. 13). Flying Officer C. E. Spencer relinquishes his short service commn. on account of ill-health (Dec. 28).

Stores Branch

Squadron Leader F. Tedman, M.B.E., is placed on retired list (Dec. 22). Flt. Lt. L. T. Sanderson, D.S.M., is placed on retired list (Dec. 25).

Chaplains Branch

The Rev. J. R. Walkey, M.A., is placed on half-pay list, Scale B, from Nov. 28 to Dec. 11, inclusive.

ROYAL AIR FORCE RESERVE
RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flying Officer J. F. Lawn is transferred from Class C to Class A (Oct. 31).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Flight Lieutenants : H. G. P. Ovenden, to Station H.Q., Worthy Down ; 12.12.32. R. H. Carter, to Marine Aircraft Experimental Estab., Felixstowe ; 13.12.32.

Flying Officers : C. C. O'Grady, to No. 4 Flying Training School, Abu Sueir, Egypt ; 9.12.32. J. K. Brew, to No. 502 (Ulster) (B) Sqdn., Aldergrove ; 10.12.32. A. E. Dobell, to No. 202 (F.B.) Sqdn., Malta ; 10.12.32. F. A. A. H. Strath, to Aircraft Depot, Karachi, India ; 10.12.32. I. V. Hue-Williams, to No. 208 (A.C.) Sqdn., Heliopolis, Egypt ; 9.12.32. R. H. Younghusband, to No. 60 (B) Sqdn., Kohat, India ; 10.12.32.

Pilot Officer A. W. Geoghegan, to No. 503 (Co. of Lincoln) (B) Sqdn., Waddington ; 9.12.32.

Accountant Branch

Flying Officer E. L. G. Le Dieu, to No. 8 (B) Sqdn., Khormaksar, Aden ; 8.12.32.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty :—

Lt.-Coms. (*Flight Lts., R.A.F.*).—S. Richardson, to *Victory* for School of Naval Co-operation, Lee-on-Solent, and for 445 Flight, in command ; and A. A. Murray, to *Dorsetshire*, for 407 Flight, in command (Jan. 2).

Lt.-Coms. (*Flying Officers, R.A.F.*).—J. H. I. Wood and G. M. Pares, to *Victory* for School of Naval Co-operation, Lee-on-Solent, and for 443 Flight (Jan. 2).

Lts. (*Flying Officers, R.A.F.*).—D. R. F. Cambell and P. E. C. Judd, to *Furious*, and for 401 Flight. G. Willoughby, to *York*, for 407 Flight ; C. John and T. G. Carey, to *Exeter*, for 407 Flight (Jan. 2) ; A. J. Tillard, G. B. Kingdon, J. A. L. Drummond, and I. R. Sarel, to *Glorious*, for 409 Flight (on embarkation) ; D. H. Elles, to *Victory*, for R.A.F. Base, Gosport, and J. Casson, to *Victory*, for R.A.F. Station, Netheravon, for 405 Flight (on completion of final d.l.t.).

Sub-Lts. (*Flying Officers, R.A.F.*).—R. C. Tillard and V. C. Grenfell, to *Victory*, for R.A.F. Base, Gosport (on completion of final d.l.t.).

ROYAL AIR FORCE

Flt.-Lt. G. V. T. Thomson, to *Courageous*, for 466 Flight, in command (Dec. 13).

HALF-YEARLY PROMOTIONS

The Air Ministry announces :—

The undermentioned promotions are made with effect from January 1, 1933 :—

General Duties Branch

Air Chief Marshal to be Marshal of the Royal Air Force : Sir John Maitland Salmond, G.C.B., C.M.G., C.V.O., D.S.O.

Air Marshals to be Air Chief Marshals : Sir Edward Leonard Ellington, K.C.B., C.M.G., C.B.E., A.D.C. Sir William Geoffrey Hanson Salmond, K.C.B., K.C.M.G., D.S.O.

Air Vice-Marshal to be Air Marshal.—Hugh Caswall Tremenheere Dowding, C.B., C.M.G.

Air Commodore to be Air Vice-Marshal.—Philip Bennet Joubert de la Ferte, C.M.G., D.S.O.

Group Captains to be Air Commodores : Alexander Duncan Cunningham, C.B.E. ; Geoffrey Rhodes Bromet, D.S.O., O.B.E. ; Francis Knox Haskins, D.S.C., A.D.C. ; John Eustace Arthur Baldwin, D.S.O., O.B.E., A.D.C.

Wing Commanders to be Group Captains : Henry John Francis Hunter, M.C. ; Arthur Clinton Maund, C.B.E., D.S.O. ; Arthur Claud Wright, A.F.C. ; Charles William Nutting, O.B.E., D.S.C. ; Robert Leckie, D.S.O., D.S.C., D.F.C.

Squadron Leaders to be Wing Commanders : William Douglas Budgen, O.B.E. ; John Joseph Breen ; Patrick Huskinson, M.C. ; Lionel Guy Stanhope Payne, M.C., A.F.C. ; Theodore Quintus Studd, D.F.C. ; Claud William Mackey ; Brian Edmund Baker, D.S.O., M.C., A.F.C. ; Francis Henry Coleman, D.S.O. ; Kenneth Malise St. Clair Graeme Leask, M.C. ; Hubert Wilson Godfrey Jones Penderel, M.C., A.F.C. ; Cyril Nelson Lowe, M.C., D.F.C. ; Robert Henry Magnus Spencer Saundby, M.C., D.F.C., A.F.C. ; Athol Wordsworth Mylne ; John Kenneth Summers, M.C. ; Ernest Leslie Howard-Williams, M.C. ; John Whitaker Woodhouse, D.S.O., M.C.

Stores Branch

Squadron Leader to be Wing Commander : George Stevens, O.B.E.

Accountant Branch

Flight Lieutenants to be Squadron Leaders : Edward Charles Mackintosh Knott ; William Edward Fisher, M.C.

ACCOUNTANT OFFICERS, ROYAL AIR FORCE

The Air Ministry makes the following announcement :—

The Air Ministry announces that an examination will be held in the latter part of March, 1933, for the entry into the Accountant Branch of the Royal Air Force, of qualified and experienced civil accountants. Three vacancies are likely to be available. Candidates must have attained the age of 22 and not have attained the age of 26 on July 1, 1933. No relaxation of these age limits will be permitted in any circumstances.

The competition will be held in London by the Civil Service Commissioners and will include (1) an interview before a selection board at which stress will be laid on accounting experience and special weight given to the type of experience provided by articled service ; (2) an examination in English and general knowledge (essay, précis, and questions to test knowledge of matters of general interest) ; and (3) an examination in book-keeping and accountancy (excluding partnership and executorship accounts), the standard being that of the final examinations of the Institute of Chartered Accountants and the Society of Incorporated Accountants and Auditors.

The emoluments of an Accountant Officer consist on the one hand of pay, and on the other of accommodation, fuel, light, rations, and personal attendance provided in kind. When the latter are not available, cash allowances are granted in lieu. The total of the pay and cash allowances of accountant officers ranges at present rates from about £360 a year for an officer on first entry to £1,116 a year for a married officer in the highest rank.

The Accountant Branch provides a permanent career. It is not, of course, possible to pledge the future, but so far as can be foreseen, the Branch will be subject to no sudden changes affecting adversely the fortunes of its officers.

Officers enter the Branch on probation with the rank of Pilot Officer and after twelve months' satisfactory service are confirmed in their commission and promoted to the rank of Flying Officer. Thereafter promotion is by selection. The next ranks are Flight Lieutenant and Squadron Leader, and it is contemplated that officers who give satisfactory service should be promoted at least up to the latter rank, while a reasonable proportion would be able to expect promotion to the higher rank of Wing Commander and some to the rank of Group Captain. It must be understood, however, that promotion depends on requirements and requirements on future circumstances, but the policy of the Air Ministry is directed to ensuring to Accountant Officers a career not inferior to that indicated above.

The length of the career provided depends on the rank attained. The compulsory retiring ages which are subject to variation are at present for Squadron Leaders 53, for Wing Commanders 57, and for Group Captains 60 ; any officers not attaining the rank of Squadron Leader would be retired at the age of 50.

Application should be made to the Secretary, Air Ministry (S. 7), Kingsway, London, W.C. 2, for the regulations and for application forms. Completed application forms should reach the Air Ministry by February 1 next, or at latest by February 15.

Reorganization of Fleet Air Arm Flights

CONSEQUENT on the increased provision of aircraft for embarkation in H.M. ships other than aircraft carriers and the allocation of units for this purpose, a reorganization of certain flights is necessary and the following changes will, therefore, be made :—

(i) *No.* 401 (*Fleet Fighter*) *Flight* will be brought up to an establishment of 9 aircraft by the amalgamation of the present unit with half of No. 405 (Fleet Fighter) Flight, with effect from January 2, 1933, and will be known as No. 401 (Fleet Fighter) Flight.

(ii) *No.* 405 (*Fleet Fighter*) *Flight.*—The remaining half of this flight will be brought up to an establishment of 5 aircraft by the addition of 1 aircraft from each of Nos. 406 and 407 Flights, with effect from January 2, 1933, and will be known as No. 405 (Fighter Reconnaissance) Flight. The unit will be transferred to the China Station at a date to be promulgated later and will provide aircraft for the 5th Cruiser Squadron on that station.

(iii) *No.* 403 (*Fleet Fighter*) *Flight.*—This unit will continue with an establishment of 9 aircraft and will be allocated to H.M.S. *Hermes*. Until the arrival on the China Station of No. 405 (Fighter Reconnaissance) Flight mentioned in sub-para. (ii), No. 403 Flight will continue to supply aircraft for embarkation in ships of the 5th Cruiser Squadron, China Station.

(iv) *No.* 406 (*Fleet Fighter*) *Flight* will be established with 2 aircraft only and reserved for the 4th Cruiser Squadron, East Indies Station, with effect from January 2, 1933. The remaining aircraft of this flight will be absorbed into No. 405 Flight, as stated in sub-para. (ii).

(v) *No.* 407 (*Fleet Fighter*) *Flight* will be established on a 5-aircraft basis with effect from January 2, 1933, the remaining aircraft being absorbed into No. 405 Flight as stated in sub-para. (ii). The unit, having been re-equipped with Osprey aircraft, will be known as No. 407 (Fighter Reconnaissance) Flight, and it will be reserved for the 2nd Cruiser Squadron, Home Fleet.

THE ROYAL AIR FORCE MEMORIAL FUND

THE usual meeting of the Grants Committee of the above Fund was held at Iddesleigh House on December 15. Mr. W. S. Field was in the chair, and the other members of the Committee present were :—Air Commodore B. C. H. Drew, C.M.G. ; Mrs. F. V. Holt ; Squadron Leader H. G. W. Lock, D.F.C., A.F.C. The Committee considered in all 24 cases, and made grants to the amount of £565 9s. 8d.

AIRCRAFT COMPANIES' STOCKS AND SHARES

ALTHOUGH owing to holiday influences business in the stock and share markets has been of reduced volume, a steady showing has been maintained in the past month. The rally in sterling brought about improvement in British Government stocks, which has been reflected by a better tendency in investment issues generally. Interest also attached to leading industrial shares on the view that the market outlook will be favourable early in the New Year. A good deal of activity has been shown in various shares of aircraft and associated companies, partly on annual report considerations. Fairey Aviation have been an outstanding feature under the influence of further increase in net profits from £113,885 to £128,106 and the maintenance of the dividend, which bears out the view mentioned in these notes on several occasions that there appeared grounds for expecting that 10 per cent., tax free, would again be forthcoming. On balance for the month there has been a rally in the shares from 14s. 6d. to 17s. 6d. At the meeting there was a denial of the market rumour of a forthcoming statement from the directors announcing their intention to pay off the outstanding balance of the 8 per cent. First Mortgage Debentures in 1933. This would, of course, be to the advantage of holders of the ordinary shares, for it would mean a considerable saving as the debentures carry interest at the rate of 8 per cent. They were issued in 1929, when money rates were high and it was necessary to offer a high return to investors. De Havilland, which have also been under the influence of annual report considerations, have not been particularly active, and are 1s. down on balance for the month at 15s. 3d. Armstrong-Siddeley Development preference have gone "ex" their usual half-yearly dividend, but are the same as a month ago at 18s. 1½d.; the report shows an increase in profits. Although Handley Page preference show a decline during the same period from 8s. 9d. to 7s., they have not experienced any heavy selling. At times, when market conditions generally are inactive, the tendency is for only a small amount of liquidation to have a disproportionate effect on prices. D. Napier are within a few pence of their previous month's price at 3s. 9d. The 7½ per cent. preference have been retained at 18s. 9d., but the 8 per cent. preference show a decline from 15s. 7½d. to 12s. 6d. Petters ordinary and preference continue to be held tightly and have experienced very little business. The market is prepared for the directors to follow last year's precedent of not paying the next half-yearly dividend on the preference shares until March. Steady buying has been in evidence during the month for Rolls-Royce, which show a rise on balance from 43s. 3d. to 46s. 3d., but Ford Motor are lower at 18s. 6d., against 21s. 3d. Imperial Airways have again been supported on prospects; they are 23s., compared with 21s. a month ago. British Oxygen come in for good support and show a further rise for the month from 23s. 10½d. to 26s. 3d.; it is argued in the market that the company stands to benefit from any material expansion in activity in the engineering and allied trades. Triplex Safety Glass are 31s. 6d., compared with 40s. a month ago, but this reflects the return of capital to shareholders which has halved the nominal value of the shares to 10s. Vickers, which were dull in the previous month on disarmament developments, have shown a better tendency and moved up from 6s. 9d. to 7s. 6d. Talk of a further increase in the price of petrol in the near future drew attention to oil shares at one time, but they have fluctuated rather sharply.

Name	Class	Nominal Amount of Share	Last Annual Dividend %	Current Week's Quotation
Anglo-American Oil	Deb.	Stk.	5½	102
Armstrong-Siddeley Develop.	Cum. Pref.	£1	6½	18/1½xd.
Birmingham Aluminium Castg.	Ord.	£1	5	17/–
Booth (James), 1915	Ord.	£1	15	57/6
Do. do.	Cum. Pref.	£1	7	27/–
British Aluminium	Ord.	£1	5	23/9
Do. do.	Cum. Pref.	£1	6	21/3
British Celanese	Ord.	10/–	Nil	8/–
British Oxygen	Ord.	£1	3	26/3
Do. do.	Cum. Pref.	£1	6½	25/7½xd.
British Piston Ring	Ord.	£1	12½	28/6
British Thomson-Houston	Cum. Pref.	£1	7	27/6xd.
Brown Brothers	Ord.	£1	10	31/3
Do. do.	Cum. Pref.	£1	7½	26/3
Dick (W. B.)	Cum. Pref.	£10	5	125/–
De Havilland Aircraft	Ord.	£1	2½	15/3
Dunlop Rubber	Ord.	c	Nil	20/6
Do. do.	"C" Cum. Pref.	16/–	10	20/–
En-Tout-Cas (Syston)	Def. Ord.	1/–	Nil	–/6
Do. do.	Ptg. Pfd. Ord.	5/–	8	2/6
Fairey Aviation	Ord.	10/–	10*	17/6
Do. do.	1st Mt. Deb.	Stk.	8	110
Firth (T.) & John Brown	Cum. Pref.	£1	6D	4/–
Do. do.	Cum. Pref.	£1	5*D	3/6
Ford Motor (England)	Ord.	£1	Nil	18/6
Fox (Samuel)	Mt. Deb.	Stk.	5	84½
Goodyear Tyre and Rubber	Deb.	Stk.	6½	104
Handley Page	Ptg. Pref.	8/–	10B	6/10½
Hoffmann Manufacturing	Ord.	£1	Nil	15/6
Do. do.	Cum. Pref.	£1	7½	19/4½xd.
Imperial Airways	Ord.	£1	3	23/–
Kayser, Ellison	Ord.	£5	Nil	55/–
Do. do.	Cum. Pref.	£5	6	72/6
Lucas (Joseph)	Ord.	£1	20	77/6
Napier (D.), & Son	Ord.	5/–	Nil	3/9
Do. do.	Cum. Pref.	£1	7½	18/9
Do. do.	Pref.	£1	8A	12/6
National Flying Services	Ord.	2/–	Nil	–/4½
Petters	Ord.	£1	Nil	15/–
Do. do.	Cum. Pref.	£1	7½	13/9
Roe (A. V.), (Cont. by Armstrong-Siddeley Devel, *q.v.*)	Ord.	£1	—	—
Rolls-Royce	Ord.	£1	10	46/3
Smith (S.) & Sons (M.A.)	Def. Ord.	1/–	Nil	2/6
Do. do.	Pt. Ptd. Ord.	£1	7	25/–
Do. do.	Cum. Pref.	£1	7½	22/6
Serck Radiators	Ord.	£1	12½	30/–
"Shell" Transport & Trading	Ord.	£1	7½*	48/9
Do. do.	Cum. Pref.	£10	5	£10½
Triplex Safety Glass	Ord.	10/–	10E	31/6
Vickers	Ord.	6/8	5	7/6
Do. do.	Cum. Pref.	£1	5*	19/3
Vickers Aviation (Cont. by Vickers, *q.v.*)	—	—	—	—
Westland Aircraft (Branch of Petters, *q.v.*)	—	—	—	—

* Dividend paid, tax free. c £1 unit of stock. D Last xd. March, 1931. A Last xd. September, 1931. B Last xd. July, 1932. E On shares of £1 denomination.

PUBLICATIONS RECEIVED

Britain's Air Peril. By Major C. C. Turner. London: Sir Isaac Pitman & Sons, Ltd. Price 5s. net.

Ausgewählte Schweisskonstruktionen. Vol. 4. "Fahrzeugbau." Compiled by Dipl.-Ing. Ernst Kalisch. VDI-Verlag G.m.b.H., Berlin, N.W.7. Price RM. 12·50.

NEW COMPANIES REGISTERED

UNIVERSAL AIRCRAFT SERVICES, LTD., 6, Broad Street Place, E.C.—Capital, £1,000, in £1 shares (700 7½ per cent. cum. pref. and 300 ordinary) Objects: To carry on the business of aircraft, motor, electrical and general engineers, radio and wireless dealers, repairers and general merchants, hotel and restaurant proprietors, buyers and sellers of aircraft, and flying instructors; to undertake aerial cinematography, etc. First directors: D. L. Townsend, 72, Torrington Park, N.12, H. B. G. Mickelmore, 47A, St. Mary's Road, Ealing, W.5. Secretary: R. W. West.

ROLLASON AVIATION CO., LTD.—Room 153, Air Port of London, Croydon, Surrey. Capital £6,000 in £1 shares (5,400 5 per cent. cumulative preference and 600 ordinary). Acquiring the business of aircraft operators carried on at the Air Port of London, Croydon, and at Yapley, Sussex, as Rollason, Muir & Rickard. Directors: W. A. Rollason, "Machree," Sandy Lane South, Wallington, Surrey; A. F. Muir, 13, Stafford Road, Waddon, Surrey; W. F. Rickard, 27, Nursery Close, Shirley, Croydon, aircraft operator; R. T. Boyd, Gibcracks, Warlingham, Surrey.

CENTRAL AIRPORTS, LTD., 2, Victoria Street, S.W.1.—Capital, £1,200, in 6,000 founders' shares of 2s. each and 12,000 ordinary shares of 1s. each. Under agreement with G. W. Glover, to develop and turn to account the property and assets comprised therein, to construct and manage airports, aerodromes, air, rail and road transport, stations for passengers and freight, etc. Directors: W. O. Workman, 6, Upper Hamilton Terrace, N.W.8 (director of Lambhill Ironworks, Ltd.). B. R. Hannen, 1, Shepherd House, Shepherd Street, W.1 (director of Holland & Hannen and Cubitts, Ltd.). C. W. Glover, 9, The Byway, Sutton (partner, C. W. Glover & Partners). J. G. G. Sperni, 8, Doughty Street, W.C.1 (director of Nuroads, Ltd.). Secretary: H. C. Cove, "Stella Maris," Larne Road, Ruislip.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors.

(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published January 5, 1933

16,981. H. R. RICARDO. I.c. engines of liquid-fuel-injection compression-ignition type. (384,674.)

29,425. T. B. COLLINS. Heat-exchange apparatus applicable to aircraft. (384,748.)

30,374. D. R. POBJOY and POBJOY AIRMOTORS, LTD. Means for operating rotating wings or rotors of aircraft. (384,758.)

APPLIED FOR IN 1932

Published January 5, 1933.

382. DUNLOP RUBBER CO., LTD., E. F. GOODYEAR and J. WRIGHT. Oil trapping and ejecting devices for the wheels of aircraft. (384,823.)

3,624. A.T.S. CO., LTD., W. N. WYLIE and S. SANDERS. Aircraft structures. (384,838.)

4,353. FUSION-MOTEURS. Means for separating dust from air charge for i.c. engines. (384,842.)

5,013. G. PAXTON. Apparatus for facilitating reading of navigational instruments. (384,847.)

11,227. C. P. GOERZ OPTICHE ANSTALT AKT.-GES. Aiming-devices for dropping objects from aircraft. (384,888.)

18,880. E. F. A. PUECH. Cowling for aviation engines for minimizing or extinguishing fire. (384,930.)